

MOTOR AGE

BUFFALO—ROCHESTER—HARTFORD—ST. LOUIS



UFFALO, N. Y., Feb. 14—Surpassingly beautiful from the artistic point of view, eclipsing all previous motor car shows, and displaying a better, greater and more varied number of motor cars than heretofore, the annual exhibition conducted by the Buffalo Automobile Trade Association and under the auspices of the Automobile Club of Buffalo, opened in the old Broadway arsenal this evening, attended by a tremendous crowd of motorists and motor enthusiasts. Seven previous shows have been held under the joint auspices of these two associations in the city convention hall, but with each succeeding year the exhibits increased until last year's event convinced the officials in charge that larger quarters were absolutely imperative in justice to the manufacturers and the buyers. Arrangements were then made with the city authorities for permission to use the old Sixty-fifth Regiment armory, which is the largest public auditorium in the city.

This unquestionably is the best and greatest show in the history of the motor car in Buffalo. The first show was held in Buffalo in 1903, but it was not even a marker to the splendid demonstration of advancement in the motor car line that was displayed with pride to the thousands of keenly interested advocates of the motor car, motor truck, accessories, sundries and supplies. The 1910 show will go down in history as the best under the auspices of the association.

There are more exhibitors, a more varied lot of cars and a greater amount of capital represented in this show than any other previous event of its kind in Buffalo. Mayor Louis P. Fuhrmann was the guest of honor of the evening. At 8 o'clock he pressed the button that turned on the current lighting upwards of 8,000 lamps of various candle powers, illuminating the arsenal as bright as the noonday.



MINOR SHOW CIRCUIT

February

Buffalo	14-19
Hartford, Conn.	14-19
St. Louis, Mo.	14-19
Rochester, N. Y.	14-19
Grand Rapids, Mich.	17-19
Minneapolis, Minn.	19-26
Newark, N. J.	19-26
Los Angeles, Cal.	19-26
Cleveland, O.	19-26
Salt Lake, Utah	19-26
Cincinnati, O.	21-26
Portland, Me.	21-26
Binghamton, N. Y.	21-26
Omaha, Neb.	21-26
Baltimore, Md.	22-26
Milwaukee, Wis.	22-27
Denver, Colo.	23-26
Toronto	24-March 3
Kansas City, Mo.	28-March 5

March

Boston, Mass.	5-12
Cleveland, O.	5-12
Des Moines, Ia.	5-12
Albany, N. Y.	7-12
Syracuse, N. Y.	12-19
Louisville, Ky.	17-19
Denver, Colo.	21-26
Pittsburg, Pa.	26-April 2
Montreal	26-April 2

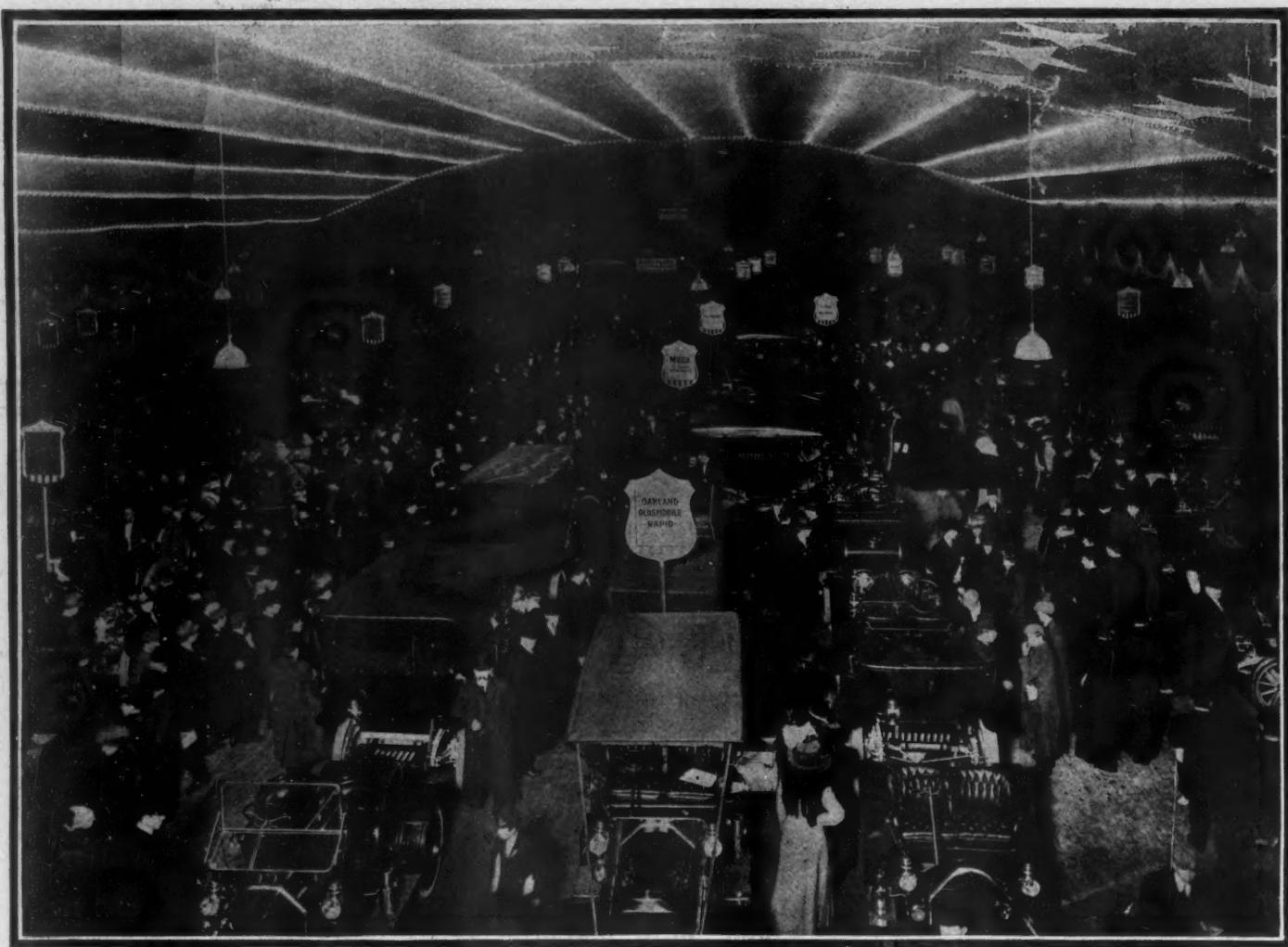
April

Bangor, Me.	23-29
-------------	-------

The decorative features of the show are gorgeous. The immense ceiling, usually bare and ugly-looking from iron girders, is smothered in a canopy of national bunting. Overtopping this is a decorative arrangement representative of the stars and stripes. This decoration resulted in the largest American flag in existence. The ceiling represents the stars and stripes, the stars being filled and studded with innumerable electric bulbs, while the lines of the stripes contained row after row of vari-colored bulbs that shone with a brilliancy truly dazzling and which blend into a color scheme perfectly superb.

A uniformity of color and system attend the decorations and exhibitions. This makes pleasing harmony. The north end of the big arsenal is divided off into offices for the members of the trade association, the club and the committee in charge of the arrangements, which latter body has desks and special telephone and telegraph service installed for private and public use. Information bureaus are established and there is nothing lacking in the line of accommodation and courtesy for patrons of the show. The balconies of the arsenal at the north and south ends of the arsenal are draped and prettily festooned, hiding all bare spots and creating a bower of beauty that is astonishingly attractive. Aisles are arranged and exhibits marked off in perfect arrangement. Each exhibitor has a uniform-sized standard and pennant, fashioned after the stars and stripes shield, bearing his name and the car he displays. The show has been properly termed the old glory show.

More than 155 different kinds of motor cars are exhibited. This represents a capital of at least \$1,000,000. The most prominent motor car manufacturers in the country have exhibits here. There are about twelve makes of electrics displayed, the Babcock car of Buffalo and others being in



COMPREHENSIVE VIEW OF BROADWAY ARSENAL IN WHICH BUFFALO SHOW IS BEING HELD

evidence. The rest are of the gasoline type. In so far as character of exhibits is concerned, the show does not display any radical difference from previous affairs. There is nothing revolutionary in the line of exhibits, with the possible exception of the torpedo bodies. This class of cars was displayed by the Stoddard-Dayton and the Powell Motor Co. of this city, which latter concern exhibits the Koehler car. Runabouts are in greater evidence this year than ever before, about twenty-five of these smaller cars being displayed at the show by various exhibitors. The agencies seem to be boosting the runabout for the 1910 season more than they have in the past. In all fifty-four different manufacturers of motor cars are represented at the show with various cars. The Pierce-Arrow, E. R. Thomas Co. and Babcock electric have exceptionally large exhibit spaces.

Many Dealers Coming

Manager Dreybus is authority for the statement that at least 100 dealers and sub-dealers will come from nearby towns to attend the show for the purpose of getting a line on the new styles for 1910. The arrival of these agents will undoubtedly mean the establishment of more agencies in western New York, a wide territory of smaller towns and cities that receives the

careful attention of the watchful and ambitious agent in this city. During the latter part of the week it is expected that many Canadians will visit the show, special railroad excursions being run from Toronto, Hamilton, St. Catharine and other nearby towns across the border. On Thursday evening the famous Kilties band of Highlanders will arrive to furnish the music.

This is the first motor car show under the active auspices of the Buffalo Automobile Trade Association. Previous events have been under the Automobile Club of Buffalo, with the former organization a sort of auxiliary. This year it is a case of vice versa, and the trade association undoubtedly will come in for showers of praise and commendation.

Society seems to manifest more interest in this year's show than ever before. This is noticeable in the evening dresses that are in evidence. Although the Broadway arsenal is on the east side the inhabitants of the fashionable west side were out strong the first night.

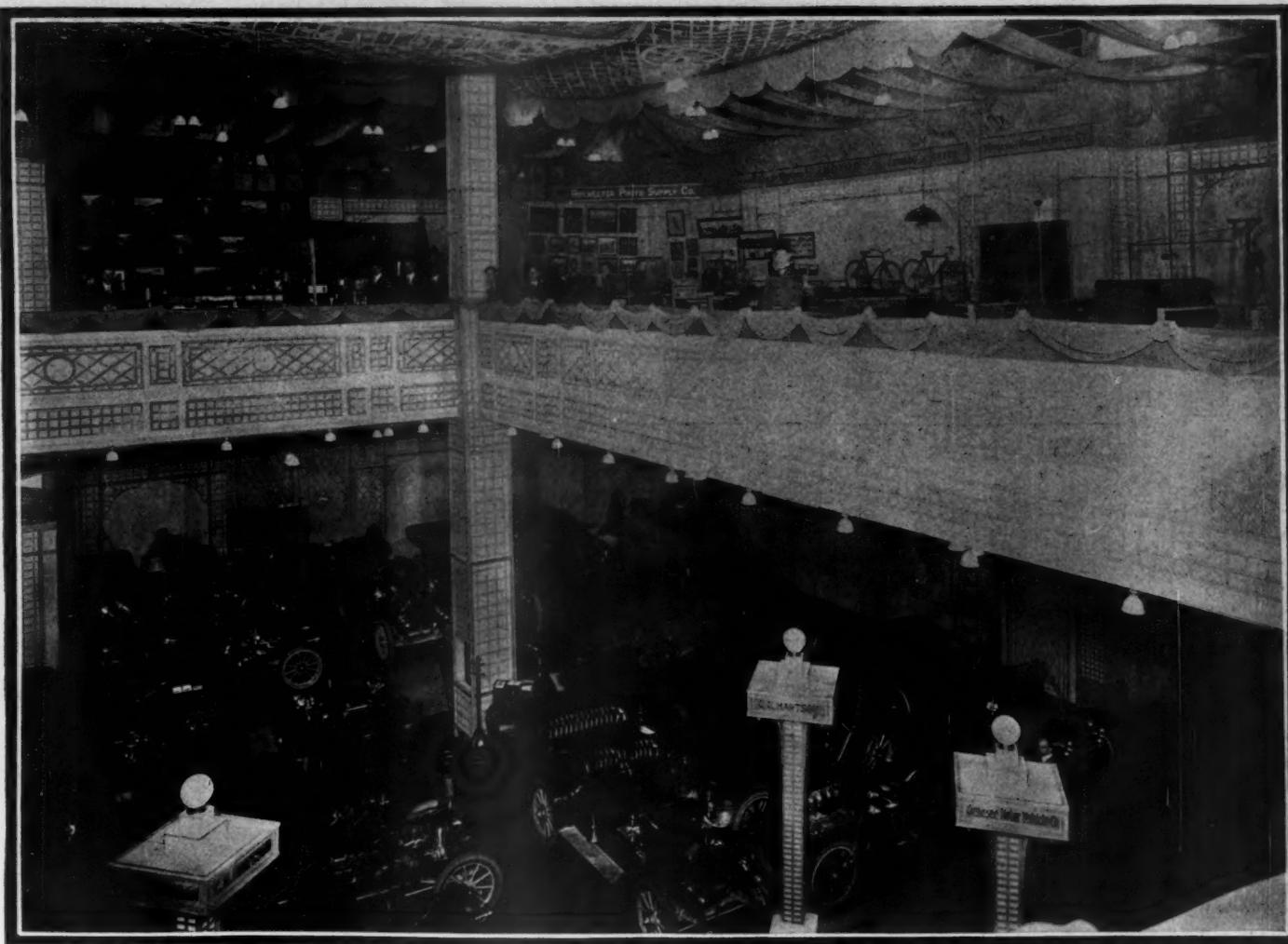
Motor car accessories occupy considerable space at the show, some of the exhibits being artistically and attractively arranged. There are eight firms showing accessories. Commercial vehicles and trucks also are in evidence, three manufacturers having exhibits of this character.

Co-Operation Noted

The management of the show is in the hands of the directors of the Buffalo Automobile Trade Association, including President Charles F. Monroe, Vice-President E. C. Bull, Treasurer Ralph E. Brown, Secretary John J. Gibson, Manager George H. Dreybus, Mason B. Hatch, G. H. Poppenberg, George Ostendorf and J. A. Cramer.

BUFFALO EXHIBITORS

Niagara Motor Car Co.—Hupmobile
 Joseph B. Schmitt—Lambert
 John J. McCullough—Moon
 Poppenberg Motor Car Co.—Reo, Overland
 Premier, E-M-F 30, Flanders 20, Studebaker
 Marion
 Fargo Electric Garage Co.—Detroit electric
 Densmore Co.—Packard
 Kane Motor Supply Co.—Cadillac
 Meyer Carriage and Auto Co.—Pullman
 Franklin Automobile Co.—Franklin
 Babcock Electric Carriage Co.—Electrics
 Pierce-Arrow Motor Car Co.—Pierce-Arrow
 E. R. Thomas Motor Car Co.—Thomas
 White Co.—White
 Ralph E. Brown Motor Car Co.—Winton
 Regal, Rausch & Lang
 Mason B. Hatch—Chalmers-Detroit, Stearns
 Centaur Motor Co.—Oldsmobile, Oakland
 and Rapid Truck
 Chittenden Motor Car Co.—Mora
 John J. Gibson Co.—Pope-Hartford
 J. A. Cramer—Stoddard-Dayton, Courier and
 Mitchell
 Henry Brunn Auto Co.—Haynes
 Ford Motor Co.—Ford
 B. & P. Motor Car Co.—Moline
 F. A. Sherman—Empire, Inter-State
 Buick Motor Co.—Buick, Welch
 Co-operative Motor Car Co.—Hudson, Knox
 Stevens-Duryea



LOOKING DOWN FROM GALLERY OF ROCHESTER SHOW AT EXHIBITS ON MAIN FLOOR

In Rochester Show

ROCHESTER, N. Y., Feb. 15—The advantage of combined effort of all dealers and tradesmen in the holding of one big show rather than their subdivided efforts toward two shows perhaps never was more forcibly emphasized than in the instance of this, the third annual show of the Rochester Automobile Dealers' Association,

BUFFALO EXHIBITORS

Maxwell-Briscoe Buffalo Co.—Maxwell, Columbia
 Bison Motor Car Co.—Abbott-Detroit, Krit
 Louis Engel, Jr.—Cartercar
 Dixon Motor Car Co.—Velle
 G. E. Kibler—Sterling, Black-Crow
 F. A. Ballou Co.—Selden
 Windsor Motor Car Co.—Kline
 Sagamore Motor Supply Co.—Ohio 40
 Winter Motor Car Co.—Everitt 30
 American Motor Truck Co.—Commercial
 Victor Motor Truck Co.—Commercial
 Buffalo Maintenance Co.—Grabowsky trucks
 Powell Motor Co.—Frayer-Miller
 Emblem Mfg. Co.—Motor cycles
 American Motor Co.—Motor cycles
 Jaynes Auto Supply Co.—Accessories
 Auto Safety Specialty Co.—Accessories
 John W. Frey—Accessories
 Kleinhan's Co.—Accessories
 P. & E. Electric Co.—Accessories
 Combination Switch Lock Co.—Accessories
 C. E. Miller—Accessories
 Robertson-Cataract Co.—Accessories
 Iroquois Rubber Co.—Accessories
 F. G. Crone—Accessories
 James G. Barclay—Accessories
 Cuba Garage Co.—Accessories
 E. E. Denniston Co.—Tops and bodies
 F. Z. Phelps—Tops
 Brunn & Co., Inc.—Bodies
 Preston Fabric Tire Co.—Sundries

ation, which opened last night for a run of 1 week, in Convention hall.

Viewed from any position, this Rochester show of 1910 must take rank with any local show held or to be held. It is large in point of exhibitors, there being eighty-five in all—it is beautiful as to its setting and decorative appointments—most magnetic in its power to draw attendance.

For the opening night more than 5,000 people crossed the thresholds and at an early hour Tuesday evening it looked as if this were going to be beaten considerably on the second day. And the out-of-town attendance is but just commencing to come. The show has been most excellently handled by Capt. C. A. Simmons and an enthusiastic campaign of publicity has been carried out on all sides. And it is still being kept up this week to prevent the slightest lull in the interest displayed.

Palace Decoration Scheme

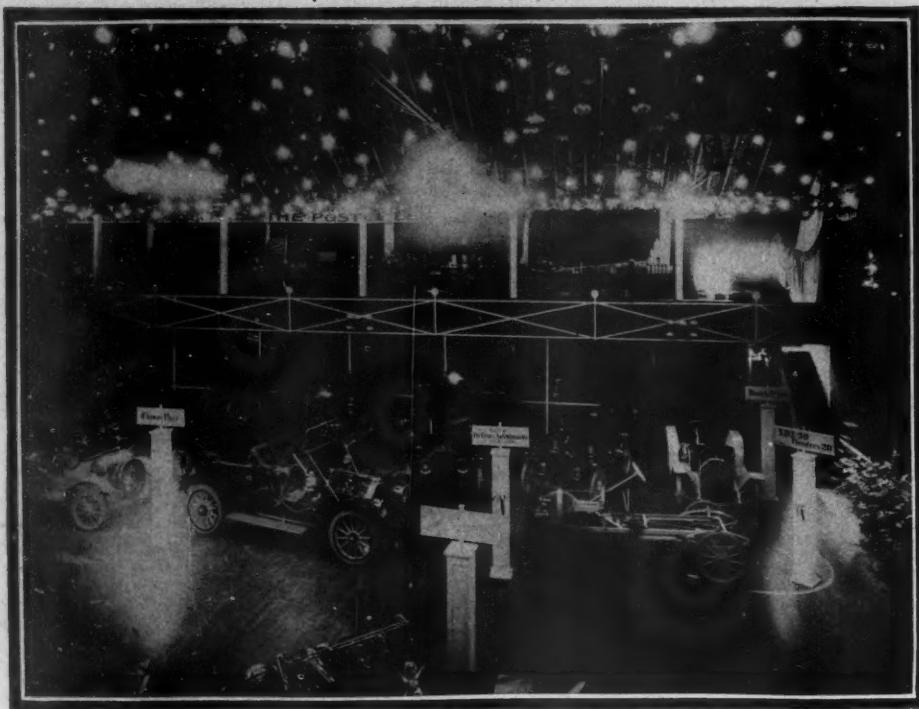
Convention hall is a big structure admirably adapted to the holding of just such exhibitions and in its divisions into show spaces and in its decorative handling its natural adaptability has been availed of in every detail. The decoration scheme is that of the Grand Central palace show in New York—in fact a large number of the decorative pieces used at the palace have been used in this show. Green and

white form the soft color scheme and care has been taken not to overdo the lighting. The walls are hung with typical paintings and the ceilings draped with bunting and long strings of mellow low-powered electric lights. This is followed out not only on the main floor, but in the basement and balcony as well. Unlike most other shows, the basement and balcony exhibits are quite as showy and tasty as are those on the main floor. This for the reason that there are no low ceilings in the basement, which is a great big roomy place, and the balcony is not crowded and congested.

Care has been taken also to see that ample seating capacity has been arranged for to rest the weary. In fact, at one end of the vast interior is a tier of seats ample to accommodate more persons than would care to sit down at any one time, so located as to afford a splendid general or panoramic view of the entire main floor and part of the balcony.

Music is to be found on every hand. Two full regimental bands and a string orchestra are distributed in the three sections of the building and each located so as not to clash with the other even though all be playing at the same time.

Several introductory exhibits are shown at this exhibition. The Sullivan Motor



IN THE HARTFORD SHOW—HALL BRILLIANTLY LIGHTED BY MANY INCANDESCENTS

Car Co. organized from one of the old-established firms of this territory is showing for the first time at any show or room the first Sullivan light delivery car. This is a 16-horsepower wagon suitable for grocers, etc. The motor is two-cylinder horizontally opposed 4½ by 4 with two-speed and reverse planetary transmission.

Cunningham Cars Are Shown

The Cunningham company has a splendid exhibit of Cunningham cars which have not been seen elsewhere this year. It is the present plan of the company at this time, however, to start after the national business more energetically this year in accordance with increased mechanical facilities recently acquired. The Jenkins Motor Car Co. is showing Jenkins cars seen only at this show.

The Wheeler-Green Electric Co., representative of the General Electric Co. in this district, show some of the new electric trucks being made on Long Island by this company.

At the exhibit of W. H. Rowerdink & Son were to be seen the new Brockway delivery wagon. This is made from the chassis turned out by the Brockway Motor Car Co., of Homer, N. Y.

The Rochester Special shown by C. P. Smith & Co., is one of several built by Mr. Smith practically for local trade. It is a 75-horsepower car with 40-inch wheel equipment all around. The motor is a Herschell-Spillman six-cylinder 5½ by 6. Mr. Smith is considering the building of a considerable number this year. The exhibition:

MAIN FLOOR

Oothout Co., Gaeth
F. W. Peck, E-M-F, Flanders, Studebaker-Garfard
A. M. Zimbrich, Stoddard-Dayton, Courier, Matheson, Waverley electric
Hollis-Rand Co., Pullman, Speedwell
Thomas J. Northway, Oldsmobile, Ford
Jenkins Motor Car Co., Jenkins

Rival Shows Held

Horton Boat, Engine and Supply Co., motors, boats and supplies
A. Faber Co., Studebaker trucks and electrics

Rochester Automobile Co., Lansden trucks, Edison batteries, Packard trucks
Independent Messenger and Delivery Service Co., delivery wagon

John J. McGreal, Cartercar
W. H. Rowerdink, Brockway commercial cars
Thomas J. Northway, Ford delivery cars and taxicabs

H. E. Tanner, Rambler
A. Vernon Hart, Chase commercial cars
Oothout Co., Gaeth trucks
W. H. Wilcox Co., A. C. Van Etten, local agent, Marmon pleasure and trucks

F. W. Peck, Schacht
Rochester Railway and Light Co., electric exhibit
C. L. Whiting, Buick trucks
Boughton & James, commercial steel armor non-skids

BALCONY

Rochester Sporting Goods Co., M & M motor cycles
Rochester Rubber Co., general sundries

Flynn Brothers, Thor motor cycles
Beers Brothers, thermostats, heat regulators

Sullivan Motor Car Co., Sullivan commercial cars
Gabel Hill Co., bodies
S. B. Roby & Co., general supplies

Ideal Carriage Washer and Automatic Water Saver Co., washers
Wheeler-Green Electric Co., electric exhibit

Union Oil Works, oils and greases
Charles S. Gibbs, supplies

Marks & Fuller, supplies
Max B. Jacobi, Woods electrics
Henry Lily & Co., trunks and leather novelties

A. Vernon Hart, Columbus electrics
Rochester Electric Constructing Co., electric display

Standard Metal Work Co., manifolds and tubing

George S. Searle, Velie
Charles A. Merkle, marine engines and motor boat supplies

A. D. Cook, Curtiss motor cycles
L. J. Barth, tires

R. Patterson, sheet steel work
Sterling Oil Co., oils and greases

Rochester Timer Co., timers

Kimpson Brothers, Yale motor cycles

F. B. McRae, oils

Kellogg Mfg. Co., pumps

Rudolph Schmidt & Co., electrical supplies

O. J. Garlock & Co., airbrusters

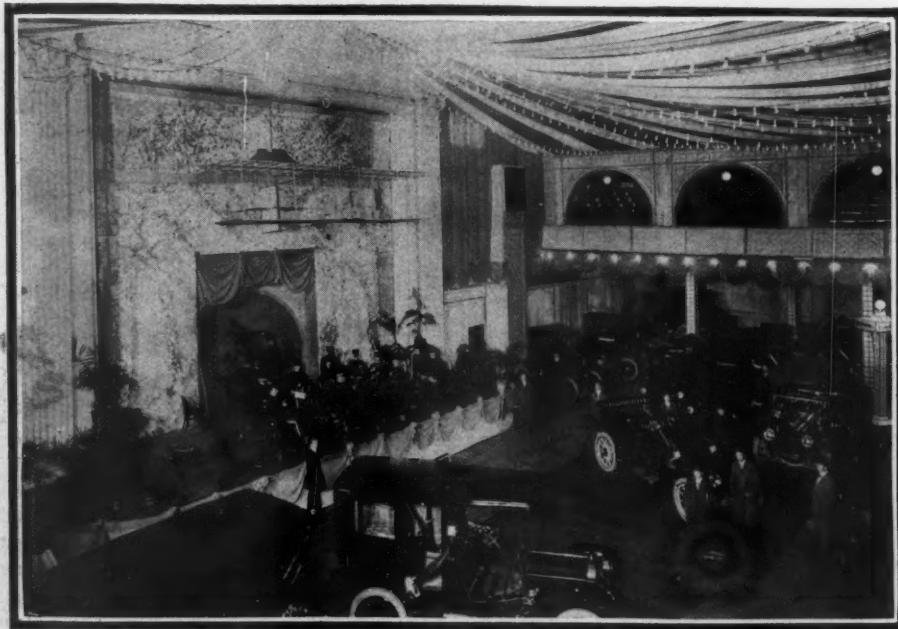
Duffy-McInerny Co., clothing

Harry Harrison, Wonder engines, motor boats

Ward Fisher, Harley-Davidson motor cycles

Edward J. Geyer, Reading-Standard motor cycles

Metz Co., Metz cars



GRAND CENTRAL PALACE DECORATION SCHEME USED IN ROCHESTER SHOW

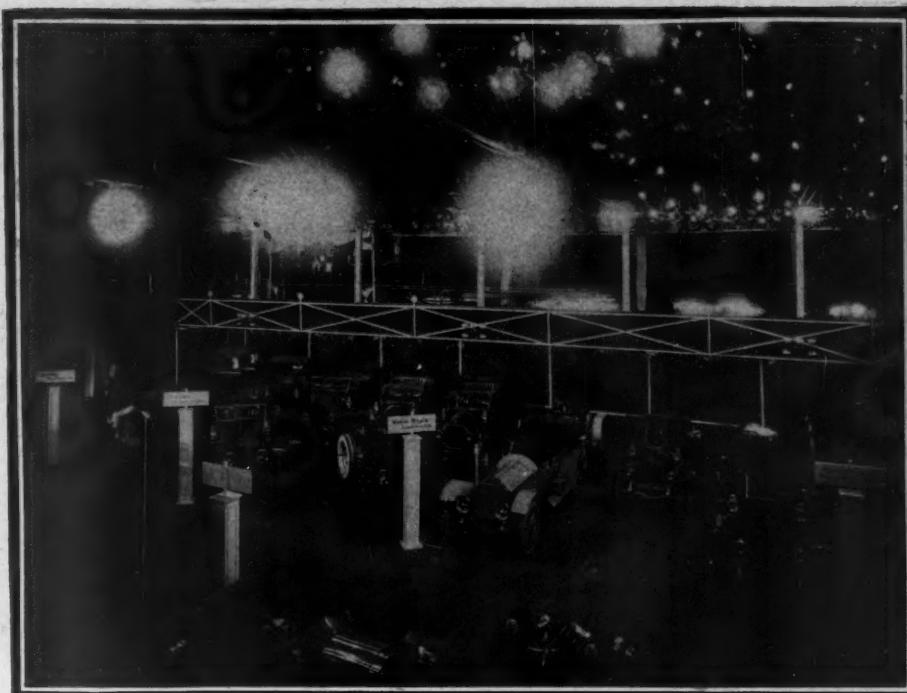
In Hartford, Conn.

HARTFORD, CONN., Feb. 14—It is motor week in Hartford, for the third annual show of the Hartford Automobile Association opened at Foot Guard hall this evening and continues for a week. It is not an idle crowd in evidence in this miniature Madison Square garden, but an enthusiastic one, eager and ready to see what there is on display. Fred W. Dart, chairman of the show committee; E. G. Biddle and W. L. Ledger have done good work and put on a show which, size of hall and number of cars shown, etc., considered, stacks up well with larger and more pretentious exhibitions held in cities of ten times the population of Hartford.

Hartford a Motor Mart

Within the past few years the motor car trade has increased by leaps and bounds and Hartford has become the mart for the smaller towns for miles around so while Hartford has a population of 100,000 it serves in reality in the motor mart almost twice as large a population. The cars on exhibition range in price from \$500 to \$5,000 and the aggregate value of the cars shown is estimated at \$100,000. The main floor is given up to car display, so is the stage and the two rooms off the main floor, as well as a portion of the basement. The balconies are devoted to the display of accessories and a complete line is shown. The committee tried to serve up something a little different in decorations this season and has admirably succeeded. The effect is colonial and even the uniformed attendants are dressed in the costumes of the time of Washington, with powdered wigs and all that sort of thing.

Above the stage proper is a balcony which is made to represent the balcony of one of those colonial mansions with which



IN THE HARTFORD SHOW—LOOKING DOWN ON MAIN FLOOR

all are familiar. Electric lights have been used to good effect. To make the show the more entertaining the Foot Guard orchestra holds forth in the elevated balcony and then, too, there are other attractions a bit out of the ordinary. The Tempo male quartet which is one of the best of the sort in this section of the country, is in evidence so that cars and music have in a sense been harmonized.

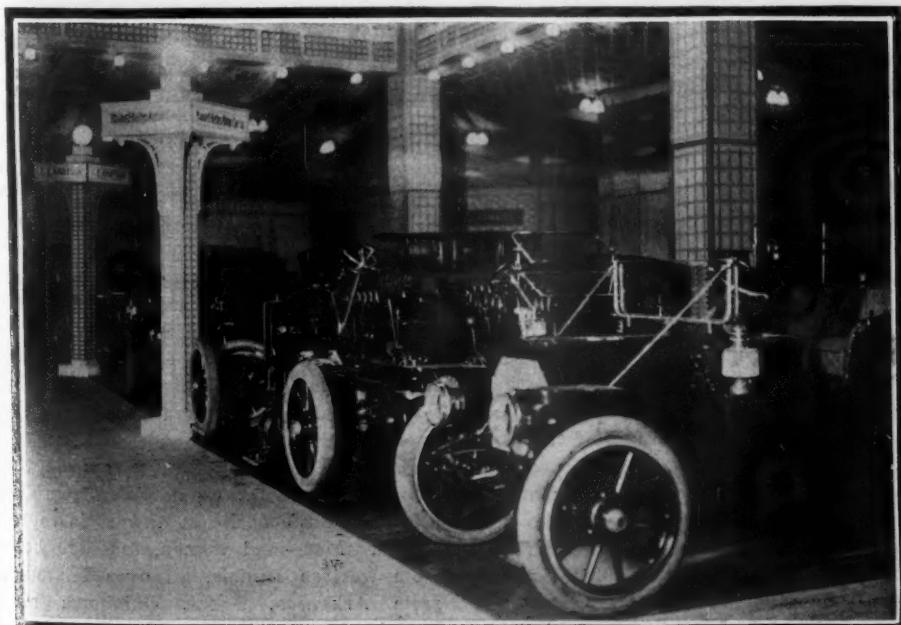
Location of Exhibits

The main floor is devoted to cars. On the right of the main entrance is the Jackson, which is shown in two snappy models by Kilby & Barrett. On the opposite side is the Mitchell, shown in several models, while next from the west is the Maxwell, shown in six different models by R. D. &

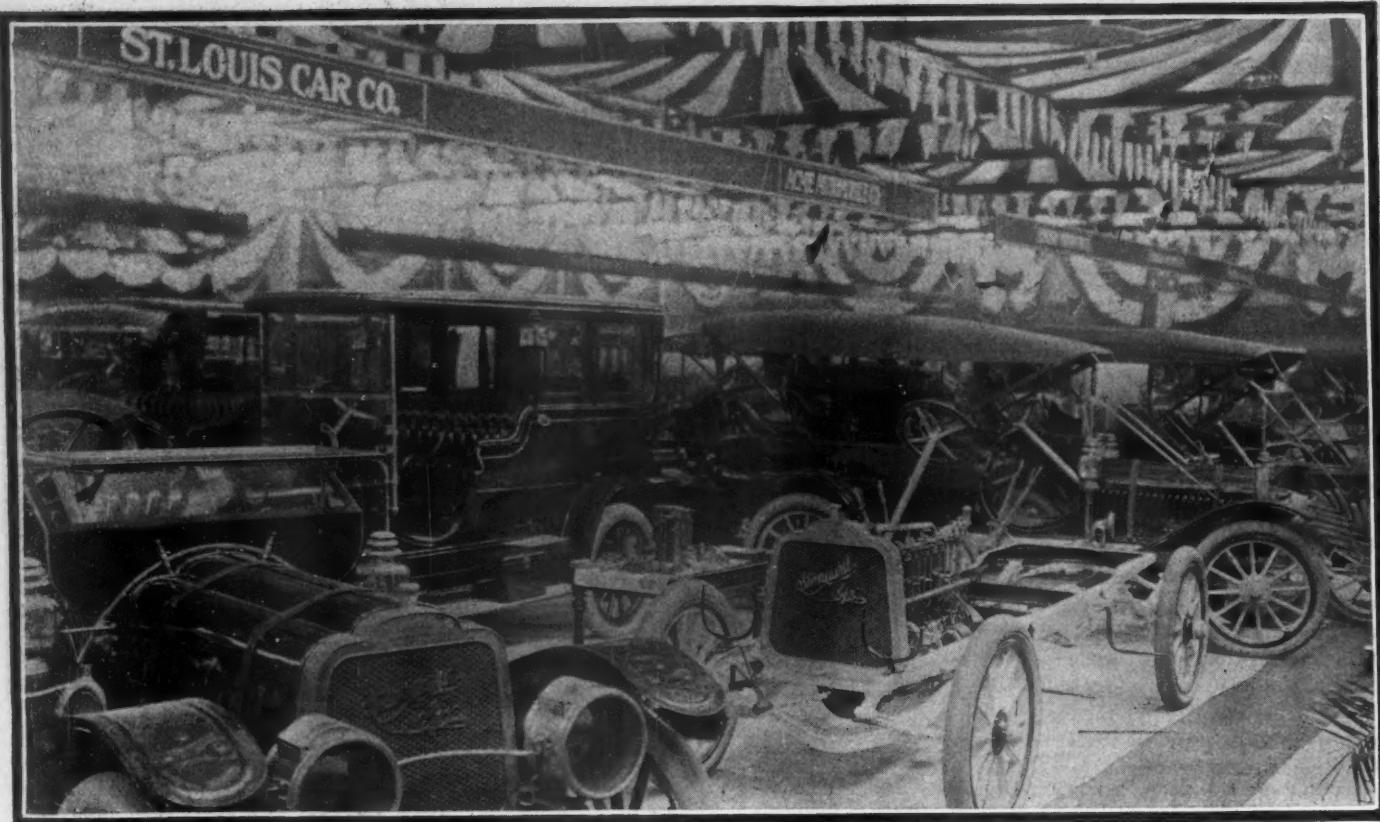
C. O. Britton, who have had the local agency for the past few years. The Baker electric is shown on the main floor by the Electric Auto Station, which is the first time that this vehicle has been exhibited in this city. Next to the Jackson exhibit is that of the Miner garage which shows two models of the Pierce-Arrow as well as two Buick pleasure vehicles and a delivery wagon. Next to the space of the Maxwell is that of the Palace Automobile Station, agent for the Thomas, Studebaker-Garford, E-M-F, Flanders and Waverley electric. Opposite the Thomas exhibit is that of Brown, Thomson & Co., who have the Cadillac touring car and a chassis in which the parts are exposed and in operation. One of the snappiest cars in the show is the Briarcliff model Lozier which is shown by Brown, Thomson & Co. The Stevens-Duryea is shown by the same firm in models XX and AA.

Up on the stage where it has now reposed on three different occasions is the Ford line shown by the Elmer Automobile Co., which has on exhibition a touring car, runabout, coupe and town car. The Ford shares the stage with the Reo, which comes back after an absence of a year, shown by the Reo Motor Car Co. The Knox is displayed in one touring model by the same concern.

Off the main floor in the south room is shown the Elmore in three models. On the north side of the hall in the room off the main floor the Rambler is shown by Foster & Co., of this city, who took the agency for this car a few months ago. Down in the basement are several cars that have proven to be attractions. The Hupmobile is shown by C. K. Hansen. The Empire is another newcomer and is shown by Kaeser & Wilbur, of West Hartford, who recently entered the field. The Franklin is shown



A SCENE IN ROCHESTER SHOW—UNDER THE BALCONY



ST. LOUIS' CLASSY SHOW, WHICH IS HELD THIS YEAR IN THE FIRST REGIMENT ARMORY

by S. M. Hutchins. The Everitt 30 is shown by the J. T. Curtiss Co. and so is the Velie, both newcomers.

The show will continue for a week. The Packard Motor Car Co., of New York city, is conducting a private exhibition at the Allyn street salesrooms.

Just to make the week more interesting from a motoring point of view the Connecticut Automobile Show Association is holding a week show at the old First Regiment armory. Here the decorations are not so lavish, though there is far more available floor space on one floor than is to be had at Foot Guard hall. The decorations are simple, yet effective. Here is shown the Houpt. The McCue and the Staver are shown, both in touring models. The Jackson, which is on exhibition at the dealers' show, also is here. The Matheson comes to this city for the first time. Two Corbin models are shown, as well as the Cameron and Moline. The Belmont is another new Nutmeg product and is shown in this city for the first time. Then, too, the Winton is on view.

The list of exhibitors in the dealers' show is as follows:

Brown, Thomason & Co.—Lozier, Cadillac and Stevens-Duryea
Palace Automobile Station—Studebaker-Garford, Flanders, E-M-F, Thomas and Waverley electric

Capitol City Auto Co.—Mitchell
Foster & Co.—Rambler
R. D. & C. O. Britton—Maxwell
Russell Tabor—Reo and Knox
Kilby & Barrett—Jackson
S. A. Miner—Pierce-Arrow and Buick
Caulkins garage—Middletown, Winton
Elmer Auto Co.—Ford
J. T. Curtiss, Simsbury—Velie
Kaysor & Wilbur—Empire
Electric Auto Station—Baker
S. M. Hutchinson—Franklin

St. Louis Annual Motor Exhibition

ST. LOUIS, MO., Feb. 15—The fourth annual show of the St. Louis Automobile Manufacturers' and Dealers' Association is in full swing, and, for the class, number and value of cars on exhibition, it surpasses any similar event in the history of this city. There is but one regrettable feature—a lack of sufficient room—and, at that, the space this year is more than double that available last year, and triple that of either of the two shows given previous to 1909. The show is in the First Regiment armory, and is under the protection of the soldiers. Last year the show was in the New Coliseum, a much more pretentious building, but far smaller in floor space.

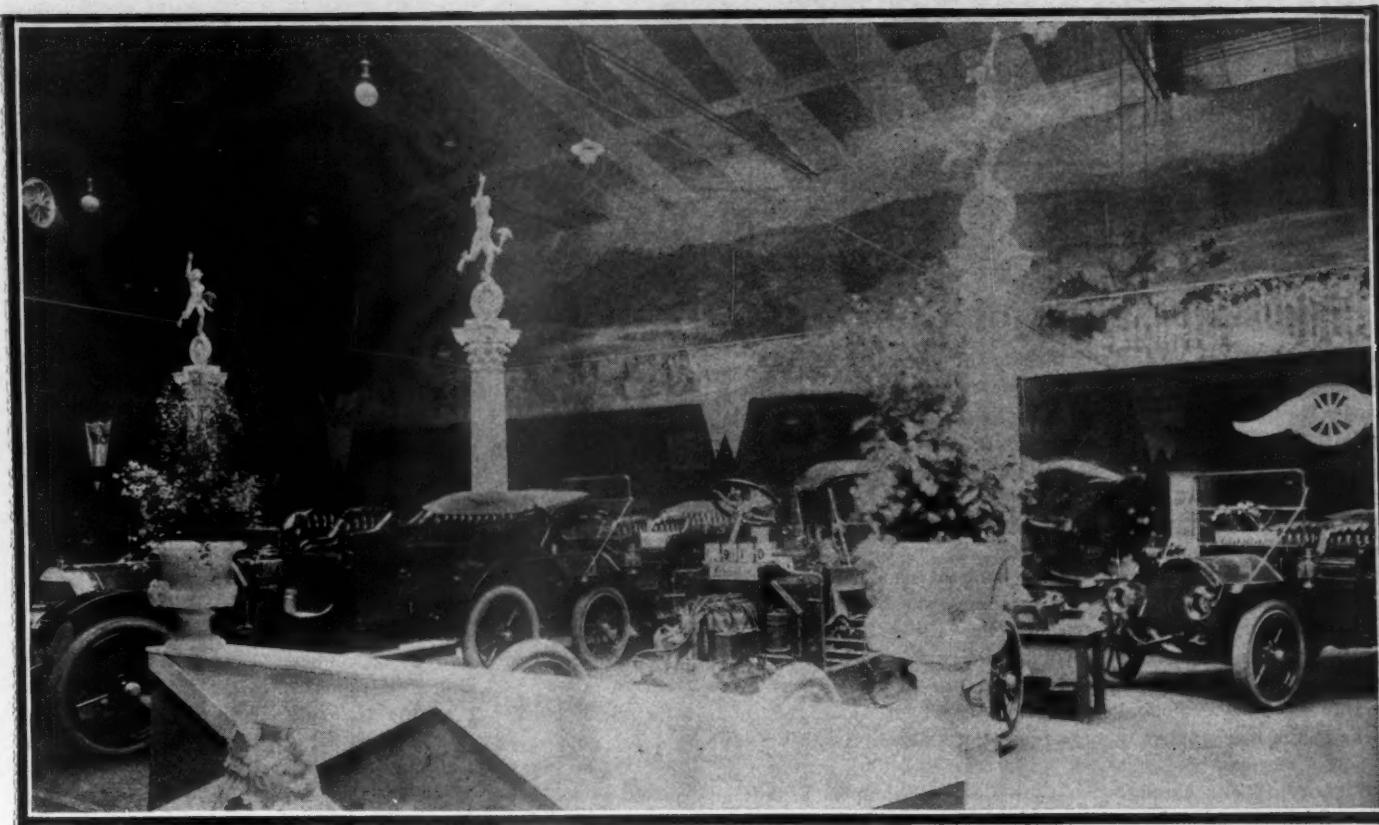
The present show, including motor cars and accessories, occupies 29,600 square feet of space, and yet there is not room for the great crowds to pass between the various exhibits. There are 210 cars in the building, the total value of which will exceed \$500,000. Thus it will be seen that a majority of the cars are high-priced. This is a feature that stands out prominently in the trade of St. Louis. Cheap cars never have been so popular as those of the more expensive make here.

The cars occupy the main floor of the armory and the accessories are in the company rooms. The accessory exhibits represent a value of about \$100,000, so that the entire show, if the cars and accessories were sold at market price, would bring \$600,000.

But it is not alone in its magnitude that this show is the only great one ever given here. The crowds who flock to the armory are more than triple the number that attended last year, taken on a daily basis. As an illustration, on the opening night, Monday, 8,900 tickets were collected at the gates, and the second day the number exceeded it by 1,000. Of course, as is the case at all similar exhibitions, a majority of the vast throngs that passed through the gates were merely sight-seers, but it is notable that the number who linger among the cars and question minutely those in charge are greater than was expected.

For 6 weeks, dealers assert, the trade in motor cars has shown a decided slump in St. Louis. Were the people waiting to inspect the various makes of cars before buying? There is no question that this is the case, at least in the opinion of the men who have cars for sale. There seems no other reasonable answer, for it is a known fact that prior to the last 2 months the business in St. Louis had grown by leaps and bounds beyond anything ever experienced here.

Not all those, however, who visit the show are St. Louisans, however. On the other hand the entire southwest is represented. Men—and women, too—are here from western Illinois, all over Missouri, from Arkansas, Texas, Oklahoma and Louisiana, and quite a number from Kansas to inspect the cars. Among these are



HOW THEY DO IT ON THE PACIFIC COAST—THE RECENT SHOW HELD IN PORTLAND, ORE.

A Car Show of Considerable Class

hardware merchants who wish to place an agency in connection with their general business. This is especially true of the Oklahoma and Arkansas visitors and those from other sections not immediately within the territory of Chicago or Kansas City.

The St. Louis firms, in many instances, provided transportation both ways for agents and prospective buyers. One firm brought sixty-five men from Iowa—men who haven't the time for pleasure trips, but who wish to spend their money for a comfortable car for themselves and their families.

Came From New Orleans

In the extreme south—New Orleans—the people apparently are depending upon this show for ideas. About 100 men, most of them merchants from that city and neighboring towns, are here. A happy coincidence, if such it may be called, is the fact that the hardware dealers of the southwest are in convention here this week—a fact which has helped both the show and the convention; for there are many at the hardware men's meeting who would not have found the time to come but for the show, and many at the show who would not have been in St. Louis except that they were sent to the merchants' convention as delegates.

But will the show help the trade in St. Louis? This is the question of vital interest to the men who are responsible for it. Not one is to be found who is not of the firm conviction that it will mean the

sale of hundreds of cars in this city and adjacent territory. The people see and are convinced. Many who never had an idea of buying a motor car will be struck by the simplicity and comparative small cost of the thing and will buy, is the belief of all. This fact was demonstrated the first day of the show. A farmer from southern Missouri—from the rugged Ozarks—stepped into the office of R. E. Lee, manager of the show, and asked his advice as to the sort of car to buy. This man was somewhat confused as to just what he wanted, but he had made up his mind to buy a motor car before going home. Mr. Lee, of course, could not be partial to any of the firms, but took the pains to explain the varied qualities of the different cars. The Missouri farmer bought a car that evening. He paid \$2,500 for it, too. It is a roadster, and he will use it on the ridge roads of the Ozarks and in the valley of the White river.

This, of course, is a rare exception. The dealers do not expect an order so soon from a visitor. But hundreds of others have expressed not only a desire to own motor cars, but have asserted that they are convinced they must have one. There have, however, been several sales to St. Louisans and those living in the immediate vicinity and many out of the city have negotiated for agencies since the show opened.

Management Is Pleased

Manager Lee and the show committee are greatly pleased with the result. As is

always the case with any great enterprise, there were some who opposed the show and who, apparently, should have favored it. Some of the very men who were at least lukewarm are today the most happy of any interested.

While this show is known as the fourth annual, it really is the first annual exhibition in this city. Until now, St. Louis, which has until within the last 6 or 7 months been ultra-conservative as to motor cars, has not been ready for a great show. The people were not educated as one dealer put it. In the future it will not be the fault of the people if the annual show is not one of the greatest public events of the year. But, to keep up the enthusiasm, some suitable building must be constructed in which to place the exhibits.

Three times the amount of space occupied by this show could have been sold within a week after the allotments began. The armory, while affording considerable floor space, is too low. The roof is only a few feet above the people's heads, and the appearance is rather cramped. So, to say the show presents a pretty aspect would not be true. The decorations are as expensive and as appropriate as the building would bear, but they are not what they should be. Then, the crowded effect of the various exhibits is to be deplored. This, however, would not affect the prospective purchaser, and it has not affected the crowds. At least, should any more attend than have attended daily, the show committee would not know what to do with them.

(Continued on Page 31.)



Standardization of Controls

LAST week Motor Age drew attention to the variety of methods of car control in use at the present time and advanced reasons why steps should be taken by manufacturers towards standardizing, to some extent, the control levers and pedals on motor cars. Scarcely a driver exists but has, one time or another, experienced the inconveniences of lack of uniformity of control, and there are scores who have met with accidents because of confusion between the control parts on the car they are driving and those on other cars. So long as there is no standardized H or other quadrant for the change-speed lever, and no standardized positions for each of the forward speeds and the reverse, this danger will continue. Drivers have been known to engage the reverse in congested quarters when low was the one wanted, the result being breaking a set of headlights on the car in the rear. Other cases are on record where, due to a similar act, a car has broken through the rear wall of a garage instead of going out through the open door. Examples of accidents which actually have occurred, due to confusion of the driver regarding the gear-shift positions, could be continued, but these will suffice to show that the standardization of control parts is no idle dream but a reality that must come.

* * *

IN the matter of control that of throttle and spark positions on the steering wheel is of equal importance. The driver who has been face to face with the problem of starting a car on which the open and closed throttle positions are not known will realize the spirit of expectancy with which he takes hold of the starting crank, not knowing whether the spark is too far advanced and if there is going to be a back-kick or not. If he does not take this risk he must open the bonnet and examine the positions, and then in some cases it is a most difficult matter to decide. Manufacturers readily could stamp the throttle lever with a T and the ignition lever with S—for spark. On these levers an arrow could be stamped designating the direction of advance or opening the throttle. On the semi-circle or quadrant over which these levers operate could be a mark C which would designate the ignition point when the piston is at the top center. Similarly the mark on the throttle quadrant would show the position of closed throttle. None of these markings would in any way confuse or add to the intricacy of the control parts.

* * *

AT present several of the manufacturers mark the different positions of the gear-shift quadrant by figures 1, 2, 3 and 4, designating forward speeds and R for reverse. This is a good policy and could be followed to advantage by other manufacturers, and which, combined with a standardization of positions for the different speeds, would be a long step toward the standardization of control parts which is bound to come at one time or another. To what has already been said might be added the necessity of standardization of brake control, which, let it be here understood, has approached nearer a standard than any other of the control elements. It is practically standard now to apply the emergency brakes by a backward pull of the lever, and the service brakes are operated by pedal. There is a tendency showing itself to dispense with the emergency brake lever and use instead pedals, the right pedal controlling the emergency brakes and the left for the clutch and service brakes. Where pedals are used for brakes and clutch, the matter of control could be readily arranged.

Glidden Route Committee

IF the Glidden tour is primarily intended for the advancement of motor car interests, then it should be a factor in the advancement of good roads; but it is questionable if it has been in the past, and if one should traverse last year's route from Detroit to Denver and back to Kansas City, the results of the tour in the improvement of the roads would be very disappointing. No tour conducted in America has done more good for road-building than the New York-Atlanta tour of the past fall. This tour was launched primarily in the good roads cause and it was a success. Before the tour started a spirit of contest was stirred up in the different counties through which the tour passed and prizes were awarded to those counties having constructed the greatest mileage of improved roads. Not only did these prizes work much good but as the tour passed through the different sections good roads conventions were in order and the entire good roads organization met and entertained the tourists, so that those in the tour gained some conception of the amount of money expended in this road-improvement scheme, and the citizens en route had an opportunity of meeting the tourists, becoming acquainted with them, and realizing that they were not out for the avowed purpose of breaking speed laws and otherwise indulging in selfish amusements.

* * *

MOTOR AGE has a suggestion for the 1910 Glidden tour—namely, the appointment of a Glidden route committee, comprised of three representatives from each noon stop and three from each night stop that the tour will make. If a 12-day run were scheduled this would mean a committee of seventy-six scattered from the start of the run to the finish. This committee would know every mile of the roadway, would be familiar with the different attitudes of the states passed through, and would be in a position to assist to a marvelous extent the good roads cause in this territory. Through this committee the interest of such organizations as boards of trade, chambers of commerce, local good roads organizations, etc., could be obtained and a general spirit for road reform carried out. It would be possible to award prizes to those counties constructing or improving highways and awarding a grand prize to that county which has done most for the improvements of its roads up to the time the tour passes through.

* * *

IT must not be construed by readers that such a campaign would have a selfish motive—merely to secure good roads for the tourists. There is nothing at the present moment that the country is in need of more than good roads. The farmers in the localities passed through are the ones to benefit most from such improvements. The motor car manufacturers will benefit indirectly in that the more good roads the more cars will they have an opportunity of selling and the possibilities in this line are such as to make it valuable to them to take a direct interest in the matter. It would be worth while for the National Association of Automobile Manufacturers, or the A. L. A. M. to offer a series of good road prizes. This would show that the motorists are willing to pay their share in the movement that will result in their good. Another feature of value in connection with a route committee of this nature is that the work of pathfinding would be greatly facilitated and there would be no doubt but that the best routes between different towns and cities would be followed.

DETROIT PUZZLED OVER SELDEN SITUATION

DETROIT, MICH., Feb. 14—A rapid succession of reports regarding the ostensible attitude of the A. L. A. M. toward the motor car manufacturers who are at present doing business without a license, has intensified the anxiety of those interests in Detroit which would be most likely to be affected by litigation brought on behalf of the lessees of the Selden patent, and the subject now is a leading topic of discussion. The local press has endeavored in every possible manner to secure some light regarding the stand of the A. L. A. M., but has been unable to elucidate anything except to emphasize the prevalence of a general impression that action of some kind is imminent. Even veteran manufacturers who have been connected with the A. L. A. M. since the formation of the organization profess ignorance of the plans of the legal talent which, under the management of Alfred Reeves, has been engaged ostensibly to start a campaign against those firms at present outside the bulwarks.

Situation in Detroit

During the past year the situation in Detroit and vicinity has changed most materially, regarding A. L. A. M. affiliations. During that period such factories as the Brush, Cartercar, Oakland, Hudson, Hupmobile, Regal, Grabowsky and others have joined the association until now the Ford Motor Co. remains the one large manufacturing concern outside. There are, however, at least six producing factories which have not as yet received licenses. This is the case with the Abbott, Demotcar, Ford, Herreshoff, Krit and Welch, as well as a host of factories that have not yet started deliveries, these being such concerns as the Watt, the Van Dyke, the Owen, the Anhut and at least a dozen others, the organization processes of which have progressed various stages from the formal filing of the articles of incorporation, to the partial equipment of a factory in this city.

It is noteworthy that, in no case aside from that of the Ford Motor Co. is there any disposition manifest to fight the matter with the A. L. A. M. In fact, virtually all the independent manufacturers in the city with the one notable exception mentioned have either made application for licenses or would do so, were they assured that such application would be considered.

The attitude of the A. L. A. M. toward the manufacturers who want to come in and are perfectly willing to pay royalties, but cannot persuade the association to accept the money is the phase of the matter that is considered most important locally.

Would Dictate Output

One of the most generally credited rumors has it that the A. L. A. M. is willing to grant licenses to the newer concerns which will limit the output to such figures as the association itself will name. The

Some Believe A. L. A. M. Will Attempt to Limit Output of the Newer Concerns Admitted

younger manufacturers regard this attitude with great alarm and point to the fact that there is apparently no curtailment in prospect at such factories as the E-M-F, the Cadillac, the Packard and the Chalmers. They feel that, in case this attitude is preserved, it will result in favor of the giants without giving the newer concerns opportunity to make any appreciable inroads on the established manufacturers.

One of the veteran manufacturers whose firm is a charter member of the A. L. A. M. calls attention to the fact that the association is in position to safeguard the industry most effectively during the life of the Selden patent, by refusing to allow the manufacture of cars whose manufacturers are not believed to be sincere, and by nipping in the bud any purely promoting schemes which may be hatched by unscrupulous individuals.

Alfred Reeves, who is credited with being in immediate charge of the new campaign of the A. L. A. M., has been in Detroit since the Chicago show, but only for a short time. Then he had nothing to say to interviewers and denied himself to the press generally.

Ford Starts Bonding Company

Formal notice of the formation of a bonding company capitalized at \$6,000,000, for the purpose of guaranteeing owners and purchasers of Ford cars against possible legal difficulties is expected from the Ford plant momentarily. This is the plan which Henry Ford has decided on, to offset the effect of the publicity in which the A. L. A. M. has warned prospective purchasers against unlicensed cars.

According to the generally accepted interpretation of the decision of Judge Swan, of the United States circuit court, there is now no litigation pending between the Studebaker Automobile Co., of South Bend, Ind., and the E-M-F company, of Detroit. The judge stated that, in his opinion, the proper method of seeking recourse, if any, should be by means of a suit in chancery. As yet no such proceeding has been started by the Studebaker attorneys, although Otto Kirchner, one of the local members of the staff, went on record after the fourth request for an injunction had been denied, with the statement that the Studebakers would continue their suit in equity in spite of Judge Swan's advice, the ultimate object being the securing of a permanent injunction, preventing the E-M-F company from sell-

ing any cars to other persons than the Studebakers. While such a course is open to the South Bend firm, it is generally conceded that the taking of proofs could not prevent the E-M-F from controlling absolutely the sale of its 1910 product, as this sort of legal process is one that could be continued indefinitely without result. There is no appeal possible from the decision of Judge Swan in the injunction case.

Some Confusion Exists

Relieved of the possibility of interference with the manufacturing and selling operations of their organization, the E-M-F company has entered vigorously on a campaign of explanation and exploitation. Considerable confusion exists in the cities in which the Studebaker company maintains branches, relative to the right to the sale of E-M-F cars. In fact, a general policy is said to have been adopted by the Studebaker branches of claiming the right to the sale of E-M-F and Flanders cars, and alleging ability to make deliveries to purchasers. In many cases the newly-appointed E-M-F distributors are located in the same block with the Studebaker branches. The present campaign of advertising explains that none but authorized E-M-F agents will be able to make deliveries of the 1910 models and lists the agents in the territory in which the publicity appears.

The report of a week ago that an alliance was in prospect between the E-M-F interests and the United States Motor Co. has ceased with the denial made by President Walter E. Flanders, of the E-M-F, following a return from New York, where he had been in conference at the time Judge Swan's decision was announced.

PETREL IN RECEIVER'S HANDS

Milwaukee, Wis., Feb. 14—The affairs of the Petrel Motor Car Co., 480 Virginia street, Milwaukee, Wis., were placed in the hands of a receiver on February 11, on petition of creditors. Referee Nye appointed the Milwaukee Trust Co. receiver under bonds of \$1,000. The proceedings were begun by the Hess-Bright Mfg. Co., Philadelphia, which has a claim of \$220; the Herman Andrae Electrical Co., Milwaukee, with a claim of \$239.62, and the Julius Andrae & Sons Co., Milwaukee, \$316.38. The involuntary bankruptcy petition cites that the company's estate is worth \$30,000. The Petrel Motor Car Co. was organized more than a year and a half ago and established a factory in Kenosha, Wis. Its quarters, however, were needed by the owner for other purposes and through proper inducements Milwaukee became the home of the company. The product is a popular-priced car, using the Waite friction transmission exclusively. It is believed that the company will be able to extricate itself from this legal difficulty in due time.



NO DOUBT ABOUT CHICAGO SHOW'S SUCCESS



CHICAGO SHOW BANQUET GIVEN BY MAXWELL-BRISCOE COMPANY TO ITS ARMY OF AGENTS

CHICAGO, Feb. 14—The annual show of the National Association of Automobile Manufacturers came to a successful ending Saturday night and, looking ahead a year, Manager Miles announced today that the affair would be repeated in 1911 in the same buildings, the Coliseum and First Regiment armory, despite reports that there are plans under way looking to the construction of a twelve-story building on Michigan avenue, between Twentieth and Twenty-first streets, which might be used for show purposes. While cognizant of the plans for the erection of this gigantic structure and knowing that promoters of the enterprise desire his support, Mr. Miles declares that he is not in on the deal and that he is well satisfied with the buildings which he now uses for his big show. No date for the 1911 exhibition has been set as yet, but Mr. Miles believes that the affair will take place in February, just the same as it has done for several years past.

Best Show of Year

Anyone who was at the show last week could not help but remark at the big attendance and the vast amount of business that evidently was being done by the 267 exhibitors, and it was clearly apparent that the 1910 exhibition of the N. A. A. M. was not only the best decorated but that it had the largest attendance of any of its predecessors, and that more cars were sold, both wholesale and retail than ever before. Indeed, the claim is made that the Chicago show excels both of the New York affairs put together in attendance and business, and this claim goes without contradiction on the part of manufacturers who showed at both Chicago and New York.

Manager Miles is not given to going into details regarding the shows which he promotes in Chicago, but this morning he was in an exuberant mood and discussed the attendance and other features of the show,

bringing out that Chicago easily holds the record for the year.

"Actually there were 140,000 paid admissions to the Chicago show for the 7 days and nights which it ran, and I believe that if one counted the number of people who actually passed through the turnstile that our count would be at least 200,000, and maybe more," said Mr. Miles. "Our records show that we issued 2,924 exhibitors' buttons, and in addition to this we gave out 1,548 dealers' buttons, which, if they were used each day—as we presume they were—would add at least 32,000 to the 140,000 paid admissions, while on top of this there was the paper of Saturday—the opening day—as well as complimentary tickets issued to the press. When you stop to think that of the 4,500 exhibitors and dealers on our list 75 per cent of them came from out of town and that each one of them probably spent at least \$50 during the week for his expenses you can see just what it meant to Chicago—not less than \$1,000,000 at the very least.

"In the way of general admissions and making comparisons with last year, we show a 25 per cent increase in general admissions, while 15 per cent more exhibitors' tickets—that is, of the half-rate variety—is recorded. Last year we had about 900 agents recorded, and this year we have 1,548, and this time we were far more careful as to whom we gave tickets. We gave only one to each concern, as we carefully examined the credentials of each, being sure that he was a bona fide dealer before we gave him a button. Our books show that we had dealers here from Maine to Mexico, and some of the larger cities

like Denver, Kansas City, Milwaukee, Minneapolis and Indianapolis, sent large delegations of dealers, all of whom contributed to the general prosperity of the show. And they came here to buy, too, as is evidenced by the fact that I have not heard a single complaint from any of the exhibitors. I should say that Friday night was the largest from a box-office standpoint, although probably Wednesday and Thursday were best from the exhibitors' point of view, in that on those days most of the business was done.

Dollar Day a Farce

"I am thinking seriously of doing away with the double admission day because it has become a farce. Originally the price was doubled in order that only those who intended to buy cars would come at that night, but my records show that from an attendance standpoint last Wednesday was no different from any other, the people cheerfully paying \$1 to get in. If I don't do away with this double admission night I will endeavor to improve on it, which can be done, I think, by shutting off the use of the exhibitors' half-price tickets on that night. The exhibitors' ticket proposition also is a serious one, and this privilege has been greatly abused by the public, which fails to understand that these pasteboards are all paid for and are not furnished free to the dealers for distribution as many seem to imagine. The distribution of these tickets imposes a great hardship on local agents, and I think in most cases it is an unnecessary expense. The tickets are distributed with a free hand and I heard of one prominent motorist who received forty tickets sent him by local dealers, which represents quite a waste of money. Of the tickets sold in this manner I judge that at least 85 per cent of them were used."

In drawing comparisons between the Chicago and New York shows one finds



that Chicago's claims to being as large as the two New York shows put together are good ones. The palace show, for instance, reports an attendance of 104,600, while it is stated that 1,284 agents were booked. It is said that the palace people were not anywhere near as strict as regards an agent's credentials so that this probably would be cut down one-fourth if only bona fide agents were counted. The garden show did not exceed the palace in point of attendance, it is said, all of which bears out Chicago's claims.

Big Business Done

Manager Miles is not the only booster the Chicago show has. Every one of the big car makers is loud in his declaration that Chicago is the best show of the year. During the week many new agencies were appointed in vacant territory, whereas it had been generally supposed that nearly every big concern had closed for the year. Besides this, the volume of retail business was so great in contrast to other years as to be most marked. Heretofore few retail sales were recorded, but this time many people actually attended the show and placed their orders, most of it being new business which had not been worked up before, and which therefore was unexpected. As to who did the biggest business at the show, there is considerable rivalry. Both the White and the Rambler claim it, and each advances proof as to their rights for first place. Thomas B. Jeffery & Co. claim to have disposed of 175 cars in separate orders during the week, while the White people say they have this beaten without completing their count. There were several other concerns—new ones—which placed many cars, but which hardly claim this was done because of the show, for they had been working on their agents before. For instance, Walter Githens, representing the Everitt in this territory, announces he took wholesale orders for 176 cars in his section.

Interesting also was the report of the White company, which claims that it dis-



HEADS OF DEPARTMENTS OF EXCELSIOR SUPPLY CO. AT ANNUAL DINNER

posed of more steam cars at this show than at any previous exhibition of the sort, and that its trade in gasoline cars was surprisingly large. Since the last show the White company has added a gasoline line and it was expected that this might detract somewhat from the popularity of the steamer. But this was not so evidently, showing that the steamer is well entrenched in the favor of the public.

The Pierce-Arrow people were handicapped by not having any 1910 cars for sale, business they did do at the show being confined to 1911. There were few agents at the Pierce-Arrow booth during the week, but notwithstanding all this a fair business in 1911 stock was done. The Packard, which was shown by its local agent, confined itself to retail business only and reports a big business. It also was claimed at this stand that there is an improved demand for high-priced cars, which may astonish some who think the invasion of so many low-priced machines may have hurt the makers of the big cars. The Knox people did a big wholesale business, while the Oakland met with such a

big demand for its new 30-horsepower model that it was forced to stop taking wholesale orders for that type.

Many Reo Agents Attend

The Reo did a good business in both branches and its attendance of agents from all parts of the country was surprisingly large. It reports dealers from Los Angeles, Denver, Omaha and Portland, Ore., while every agent in Illinois was at the show. Here it was found that the demand for low-priced cars was greater than ever, and that 50 per cent more people were in the Reo booth this year than last. Strange to say, it was found that while the demand for the single-cylinder Reo was greater than ever, the people were not so interested in the two-cylinder, which has been somewhat eclipsed by the new four the company is bringing out. The foreign exhibitors all did well, flattering reports having been received from the Fiat, Renault and Berliet, all of which did a considerable retail business during the show.

So great was the success of the show that following its close a building scheme was sprung yesterday which promises the



BUSINESS SESSION OF OFFICIALS AND AGENTS OF THE WILLYS-OVERLAND COMPANY

construction of a \$2,000,000 building to be devoted to motoring interests only. Those back of the scheme, which is being promoted by the Central Realty and Investment Co., are Lewis M. Stumer, Benjamin J. Rosenthal, Lewis Eckstein and Lee J. Lesser. It is proposed to erect the building on the east side of Michigan avenue, between Twentieth and Twenty-first streets, with a frontage of 307 feet and a depth of 170, and to cost upward of \$2,000,000. It is to be twelve stories in height, with foundations and walls to carry six additional stories if found necessary. The twelfth floor will be a roof garden, there will be a convention hall on one floor which can be used if so desired, while in the basement there will be Turkish baths, a swimming pool and a restaurant. It is proposed to fill the rest of the building with motor car dealers, using the eleventh floor for demonstrating purposes, which would make it unnecessary for the occupants of the building to go outside to give their customers a demonstration. While Manager Miles has been approached on the subject of holding a show there, he has not committed himself in any manner and evidently has not been favorably impressed with the feasibility of the scheme. As for the dealers themselves, the fact that some forty local concerns either have built or are building homes at the southern end of the row would seem to injure the chances of making this a motor mart.

Ford Makes an Answer

The show did not end without the Selden patent fight bobbing up, the latter part of the week being marked by a sharp retort from Henry Ford in answer to the warning advertisement of the Association of Licensed Automobile Manufacturers, and an attempt to form an organization of licensed dealers similar to the one started in New York recently. Ford's answer to the A. L. A. M. came out in Friday morning's papers. Ford made the claim that although the opinion of Judge Hough was filed on September 15, 1909, no injunction ever has been entered against Ford in the case, nor has any decree been handed down. Ford also states that he still has two more chances to fight the decision, one in the court of appeals and the other in the supreme court. He winds up by stating that if there are "any prospective buyers who are at all intimidated by the claims made by our adversaries that we will give them, in addition to the protection of the Ford Motor Co., with its some \$6,000,000 of assets, an individual bond backed by a company of \$6,000,000 more, or assets so that each individual owner of a Ford car will be protected until at least \$12,000,000 of assets have been wiped out by those who desire to control and monopolize this wonderful industry."

No answer has been heard from the A. L. A. M. as yet, but one of the makers recently admitted to membership in the Selden association declares that the decision of Judge Hough will be signed in a

Los Angeles Promotes Good Show

LOS ANGELES, CAL., Feb. 8—The southern California show opened last night in the Grand Avenue rink and every indication points to its being one of the most successful exhibitions ever held on the Pacific coast, more than 5,000 people attending the opening. The show colors are green and white and the building is lighted by means of 5,000 incandescents which show to advantage the many beauties of the cars on view. Small cars are in the majority, although the higher-priced models also are in evidence, while the Californians show they are up-to-date by displaying bodies of the gunboat or torpedo type. Walter Hempel, manager of the show, is given credit for producing a most satisfactory

short time, and then Mr. Ford can appeal if he wishes. This delay, as the Seldenite claims, has been caused by a legal tangle over the ownership of the patent occasioned by the fact that the Electric Vehicle Co., which brought the suit against Ford, no longer is in existence. It is taking considerable time to unravel the legal tangle and substitute the name of the Columbia Motor Car Co. for the Electric Vehicle Co., but this will be accomplished shortly, he states, then the coast will be clear for further action.

The first step toward the formation of a local organization of the licensed dealers was taken last Friday morning when some of the leaders were called together for a conference, which was attended by General Manager Reeves, of the A. L. A. M.; S. T. Davis, Jr., of the Locomobile, and one or two others of the big makers, but outside of outlining the proposition to the local men and urging the formation of such a body no other action was taken. It is said that the proposition did not meet with the unanimous approval of all the dealers and that there is some doubt as to whether such a body will be formed.

Banquets and Dinners

The custom of giving banquets and dinners to out of town dealers was continued during the week, and among the concerns which entertained were the Overland, Maxwell, White and the Excelsior Supply Co. The Excelsior dinner was held at the Chicago Athletic Association and was attended by the heads of the departments. The Overland held a dinner Monday night and followed it next day with a dealer's convention, while the Maxwell affair took place Wednesday night at the Congress hotel. The Woods Motor Vehicle Co. gave an elaborate midnight supper and vaudeville entertainment at the Lexington hotel Wednesday night. While the White company held no formal dinner during the week it established headquarters at the Congress hotel, where the White company representatives from all parts of the country met at meal times and discussed business affairs.

affair and as a curtain-raiser yesterday afternoon he had a parade through the city streets of 300 cars in which the feature was the struggle for the prize offered for the concern having the greatest number of cars in line. This prize was captured by the Standard Motor Car Co., which had fifty Ford cars in the procession, the little machines coming from San Bernardino, Glendora, Riverside, and Redlands. Of the cars on exhibition all of them are well-known in the east with the exception of the Tourist, which is a California product and which is shown by the California Automobile Co., which has on view eleven Tourist models as well as showing the Firestone-Columbus torpedo. The Standard Motor Car Co. has the Ford and Velie, the W. J. Burt Motor Car Co. has the Auburn, the Vail Motor Car Co., Pennsylvania; Bosbyshell-Carpenter Motor Car Co., Dorris; W. A. Evans, Waverley electric; Williams Auto Co., Petrel; Burkhardt-Crippen Motor Car Co., Lexington; A. N. Jung, Sterling; National Auto Co., National; Hawley-King Co., Grabowsky truck; Lane Steam Car Co., Lane steamer; Newell-Matthews Co., Whiting and Westcott; Tri-State Auto Co., Hupmobile; W. K. Cowan, Rambler; Durocar Mfg. Co., Duro; Pioneer Commercial Auto Co., Reliance; Brush Automobile Co., Brush; Import Motor Car Co., Halladay; American Auto Co., American; Blinn & Kinen, Welch; Angelus Motor Car Co., Rider-Lewis; Fred A. Cornell Auto Co., Fal-car; Pico Carriage and Automobile Co., Patterson; Stanley Steamer Co., Stanley steamer; M. S. Bulkey Motor Car Co., Autocar; Mountain Brothers, Royal and Midway. In addition there are displays made of the Fiat, Great Western, Empire and Rauch & Lang electric.

MARCH SHOW FOR LOUISVILLE

Louisville, Ky., Feb. 14—The Louisville Automobile Dealers' Association's show will be held in March in the armory. It is expected that more than 100 cars will be represented. More than two-thirds of the space afforded in the main drill hall already has been engaged. The contract under which the association secured a lease of the armory for March 17, 18 and 19 has been approved and contracts for decorations let. Regular bunting, flags and potted plants and garlands of greens will be liberally used in the arrangement. The spaces allotted to each exhibit will be defined by rows of potted plants, extending from a high embankment of greens at the back to a point in front. Tall potted plants supporting garlands will form a railing in front of each exhibit. One of the most distinctive features will be the exhibit of commercial cars and trucks. The Kentucky business man is approaching that point where he is interested in the motor truck and this will give him a chance to investigate.

Woodland Scheme for Kansas City

KANSAS CITY, MO., Feb. 12—Members of the Kansas City Automobile Dealers' Association who returned from the Chicago show last week were much pleased with the effect of the woodland decorations in the Coliseum. Maybe the satisfaction was doubly strong because the association is to have a similar setting at its show in Convention hall the week of February 28. Convention hall, reputed to be the biggest enclosed auditorium in America, is to have an addition to its promenade and display space in the nature of a balcony arena 22 feet wide that is to be built completely around the hall. In the arena and on the brink of the balcony arena will be set Georgia pine trees—a whole trainload of 'em. There are to be hedges of southern smilax and grassy paths, too, and an immense fountain in the north end of the hall behind which will rise a painted mountain peak. The Chicago perfumery idea is to be adopted and the air in Convention hall during show week is to have the delicate fragrance of violets. The elaborate sky piece that will melt in a horizon line at the sides of the hall is to have special electric lighting so that early each evening it will seem like the twilight of dawn in the hall; then it will grow brighter and brighter in the hall until the full magnificence of the decorations can be appreciated by visitors.

Minneapolis Ready For Show

Minneapolis, Minn., Feb. 14—It is estimated that the aggregate value of motor cars, motor trucks, accessories and motor vehicles to be exhibited at the Minneapolis show, February 19 to 26 inclusive, will be \$400,000. Every high-class car on the market will be shown at the armory, and a feature will be the complete assortment of models of the various makes. The management planned wisely this year in connection with the fixing of the dates for the show. It follows in the wake of the Chicago show, February 5 to 12, and hence hundreds of interested dealers of the Twin Cities who will attend the show there will return equipped with the new 1910 ideas and a knowledge of motor economics which they will impart to those who attend.

Booming Milwaukee Show

Milwaukee, Wis., Feb. 14—The second annual motor exposition of the Milwaukee Automobile Club, which opens in the new \$500,000 Auditorium on the night of Washington's birthday, will be the occasion for a big motoring rally, under the auspices of both the local club and the Wisconsin State Automobile Association, which are closely allied. President M. C. Moore of the state body will promote several extensive tours before the meetings of the various committees, while Secretary James T. Drought will lead a discussion of legislation, good roads, etc. Sessions will be held in the headquarters of the club on the second floor of the Auditorium annex, which has been reserved for the use of

members of state and local associations and their friends during the 6 days of the show, which closes Sunday night, February 27. President Moore proposes a 6-day tour, covering 700 miles, to start at the close of a big racing meet in Milwaukee on June 4.

Clarke S. Drake, president of the Milwaukee club and general director of the show, has sold the last inch of space in the new Auditorium, which affords approximately 38,500 square feet, not including several halls on the second floor of the annex. Thus far twenty-five local dealers have entered, and fourteen still hold out and will conduct private shows. Even with this dissension the 1910 show will be 50 per cent bigger than the first show in March, 1909, and it is quite probable that the business done will be greater.

Denver Space in Demand

Denver, Colo., Feb. 14—The preparations for the show to be held in the Auditorium on February 23, 24, 25 and 26 by the Denver Motor Club are almost complete. The exhibitors are taking hold with an interest that is surprising and everyone is determined to make their exhibit as attractive as possible. The club has had an artist at work for several days who has worked out the color schemes and decorating effects so that the decorators will have a plan upon which to work. All exhibits will be decorated uniformly, so that the general effect will be pleasing to the spectators. With the exception of a few small boxes the floor space already has been disposed of.

New Cars For Baltimore

Baltimore, Md., Feb. 16—When the second annual motor car show to be held in Baltimore under the auspices of the Automobile Club of Maryland opens at the Fifth Regiment armory next Tuesday evening, Baltimoreans will be confronted with just twenty makes of cars that they never have seen before on exhibition in this city. Many of the old favorites will be on display—enough, in fact, to make the total of different makes of cars to be shown number fifty-three. While some of the exhibitors will have but one car in their exhibition space, there will be many others who will have two or more, so that at this time it is safe to say that between 150 and 200 cars will be seen on the floor of the armory.

KANSAS CITY ELECTION

Kansas City, Mo., Feb. 12—At the annual meeting of the Automobile Club of Kansas City in the auditorium of the Railroad Club last Thursday night the election resulted as follows: Frank P. Ewins, president; George H. Davis, first vice-president; Frank E. Lott, second vice-president; W. P. M. Stevens, secretary; F. C. Merrill, treasurer; A. W. Peet, W. W. Cowen, A. J. Davies, Harry T. Fowler,

R. M. Rigby and W. G. Whitecomb, directors. The new officers and directors will build a house on the club's 40-acre site near Hickman's mills, about 20 miles from Kansas City. At this election W. W. Cowen, who has been president of the club for 4 years retired.

BURMAN BEFORE THE BOARD

New Orleans, La., Feb. 14—Formal charges asking the disqualification of Robert Burman have been filed with S. M. Butler, chairman of the contest board of the American Automobile Association, by Homer C. George, of the New Orleans Automobile Club. The charges assert a violation of contract between the club and the driver whereby Burman was to appear at the Mardi Gras races, February 5 and 6. George charges that a series of telegrams which passed between him and Burman constitute a contract. The driver is said to have guaranteed, for \$500, and all prizes won, to come himself, and to bring with him the Chevrolet brothers, Louis and Arthur, and Joe Grennon. After these drivers had been advertised extensively, Burman wired, 1 week before the meet, that he could not come.

Bids are being asked from various cities for a match race between George Robertson and Ralph de Palma, which is to be three heats of 5 miles each, all to be driven in 1 day. San Antonio already has bid for the race, desiring it as a feature for a 2-day meet in April.

TIRE STRIKE ABOUT OVER

Hartford, Conn., Feb. 14—The strike of the tire makers at the Hartford Rubber Works Co. in this city is practically at an end and during the past few days the company has advertised that no more men are needed, as the places of the striking tiremakers had been filled. It is said at the company that things have now assumed a normal aspect and the output is going along very satisfactorily. A large number of men are still on strike.

NEW INDIANAPOLIS ROW

Indianapolis, Ind., Feb. 14—Interests represented by Carl G. Fisher in Indianapolis have closed negotiations for purchasing two squares of ground north of the Fisher Automobile Co., in North Capitol avenue, on which will be erected a motor row, one of the most pretentious in the country. Plans for the buildings to be erected already have been made and provide for the enlargement of the Fisher building, making it 135 by 202 feet, and for two new three-story buildings, each to be 68 by 203 feet. A two-story building 44 by 195 feet and another two-story building 132 by 195 feet, also will be erected. The plans will provide room for five sales rooms and garages. The real estate purchases have been made in the name of the Globe Realty Co., and this and the improvements will represent an expenditure of approximately \$1,000,000.

A. A. A.'s Legal Session Convenes

WASHINGTON, D. C., Feb. 15—Special telegram—With the election of Charles T. Terry as permanent chairman and John Bancroft as permanent secretary, the first legislative convention of the A. A. A. got down to business this morning. The attendance of delegates was very gratifying and much interest was manifested in the proceedings. The first speaker was President Lewis R. Speare, of the American Automobile Association. In a brief address he spoke of the work which it was hoped the convention would accomplish along the line of bringing about more uniform state motor laws as well as a federal license law.

"All motorists who travel from one state to another are law-breakers," declared Mr. Speare, "simply because it is an impossibility for any human being to learn and remember all the laws relating to motor cars which have been enacted in the various states. If you blow your horn in one state or city you are arrested for disturbing the peace. If you do not blow your horn in another state you are arrested because you menace the life of citizens."

Mr. Speare also urged that some system be devised whereby the fines collected from motorists may be used to better the roads.

Chauncey Depew Gives Statistics

The address of welcome, delivered by Senator Chauncey M. Depew, of New York, was full of ginger and was applauded at frequent intervals. Among other things, he said:

"There is no more interesting problem in the industrial world than that connected with the motor car. Its history and development is more like a romance than one of enormous investment of capital and employment of labor. Twelve years ago there was scarcely a motor car in the United States. We imported all our cars for the first few years and American production

has mainly come within the last 6 or 7 years. In 1900, 10 years ago, there were 700 cars in use in the United States. There are in use this year 350,000 cars, and 280,000 have been contracted for the coming year. These 280,000 are valued at \$419,000,000. There was \$80,000,000 paid last year in wages in the motor car factories of the United States, and there was given directly and indirectly employment to over 200,000 workers. Within the last few years the American machines have so improved in excellence that importations have come to a standstill, and the American output is very much larger than the importations. In fact we now are exporting abroad 4,000 machines a year and some go to France, the home of the industry.

"Two interesting questions have arisen by this enormous expansion of the motor car. One is intra-state and the other is inter-state. Nothing which has occurred in recent years has done so much to stimulate an interest in good roads. Good roads in their relations to the farmer and the farmer to the market have been better understood since the motorists necessarily have entered upon a campaign of education than ever before.

"Our tourists in their cars have learned much from going through France over their splendid roads, of which they have 23,000 miles macadamized. They have been built and are maintained by the government. Of course, in our dual system that would be impossible, nevertheless the states might adopt the French system. There is an inspector for every mile of road in France, whose duty it is to go over his section every day and repair those breaches which left to the next rain make hopeless conditions.

"But the compelling question now is legislation. It is not the mission of this convention, as I understand it, to interfere

with the laws of the states or with local communities. It is the business of the branches of the American Automobile Associations in the several states to see after their state laws and their local regulations. But the hope of this convention, with delegates from all the states, is to secure, as has been done for the boats traveling on inland waters and crossing state lines and for continental railroads, a federal recognition which will permit free and unobstructed travel across state lines."

Chairman Terry Talks

The purpose of the convention was the subject of an address delivered by Chairman Terry. He said:

"Probably there could not be found any legislator in any state who has given the subject intelligent study who would not concede at once the soundness of the principle of uniformity in state laws on the subjects of inter-state interest; and yet, when it comes to the actual test of proposed legislation, many of these same legislators ignore the soundness of the principle, settle back into a narrow selfishness and take refuge behind that much-abused phrase states' rights. Any lawmaker who is so blind that he cannot see beyond the boundaries of his own state is of too limited a perception for the designation statesman. He either must have the scales stricken from his eyes or be quietly but effectually informed that he has missed his vocation. What the rights of motorists are, we must not ever forget, nor allow any law-making body to forget. There are no more wise or far-sighted provisions of the United States constitution than those which seek to provide against the disruption of the relations of the several states by legislation enacted in any one state against the interests and the rights of citizens of other states.

Prejudicial Legislation

"Ignorance of the character of our institutions, ignorance of the history of our country, ignorance of the laws already on our statute books and of our own law have led to the enactment of much prejudicial legislation and nowhere in greater degree than in respect to motor vehicles. Prejudice has at no time been more rampant and more unreasoning, more persistent and more effective in the restriction of rights than prejudice in respect of motor vehicles.

"It is clear that the remedy for this state of affairs is education. The duty lies upon us of bringing home in no uncertain terms to those who make the laws the truth by which they should be governed, the rights which they are bound to observe and the limitations of their power, upon which they may not transgress. In the first place, if we are really a nation, if this whole country belongs to us, if there are certain rights which every citizen of this country may exercise, then the right of free and unrestricted intercourse by any vehicle which is lawfully upon the highways is one of such rights. The highways

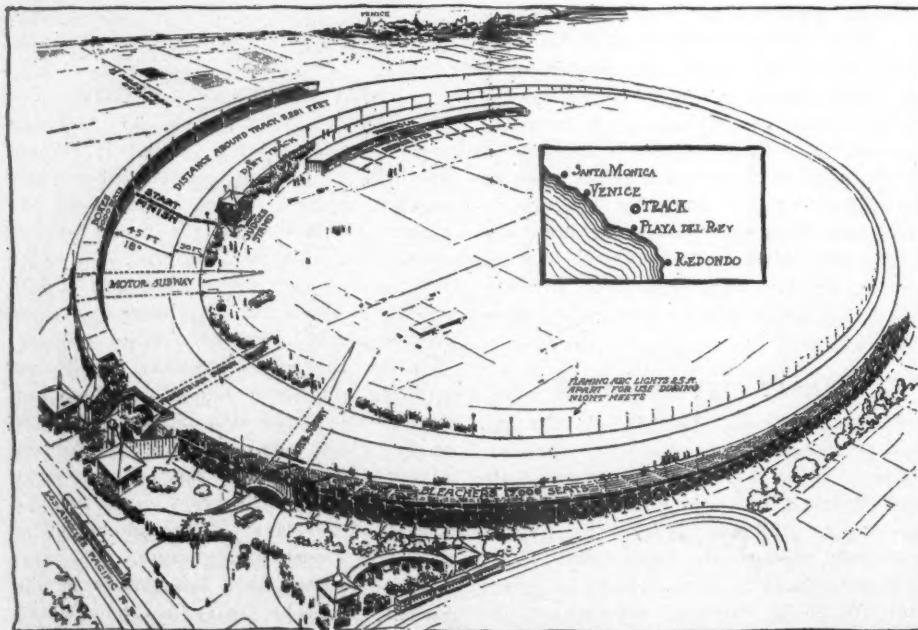


DIAGRAM GIVING A FAIR IDEA OF LOS ANGELES' NEW BOARD TRACK NOW BEING BUILT

are the highways of the nation. It is only in a restricted sense that they are the highways of a state.

"What we need in this country is not more law-making, but more law enforcement. I venture to say that every impropriety of the highway, whether by motor vehicles or other vehicles, every bit of unlawful conduct in the use of the roads, could be adequately dealt with and properly punished if there were no motor vehicle law on any statute book, and probably more effectively dealt with; but hysteria and prejudice have been at work and have accomplished great results in the way of annoyances and unjust impositions on motor vehicle users and with little or no results in the way of increased protection to the users of the road."

Cocks Promises Support

Senator R. L. Taylor, of Tennessee, delivered a humorous address which was well received. Representative Cocks, of New York, author of a bill providing for a federal license for motor cars, said that he had much to do with framing the New York motor law. He explained the purpose of his bill, and declared that the motor car would be one of the great common carriers of the future and would do much more than anything else to regulate freight rates. He pledged his aid in bringing about the enactment into law of a bill for a federal license for motor cars.

Representative James Francis Burke, of Pennsylvania, also addressed the convention. He said that the questions of inter-state commerce were becoming greater all the time, and that the elasticity of the inter-state commerce provisions of the constitution might lead much farther than anyone had expected in solving the problems.

Logan Waller Page, director of the office of public roads, said in part: "A great deal of work has been done in the past few years by engineers and chemists to meet the new condition, and I think it quite safe to say that it has been satisfactorily met as far as either type of traffic is concerned. We can build a road that will perfectly suit horse traffic, or we can build one that will perfectly suit motor traffic, but no type of construction has been devised for satisfactorily meeting both classes of traffic. Roads built of brick, concrete, bituminous materials and the various dust inhibitors are subjected to little or no wear from motor traffic, but are worn out by the action of horse's feet and narrow-tired, overloaded horse vehicles. Besides, these types of hard pavement are quite injurious to horses."

Favors No Speed Limit

"In my judgment, the wisest traffic regulations are those enforced quite generally in France and England. They prescribe no arbitrary speed limit, but empower police officials to arrest for reckless driving whether the speed be high or low. It must be apparent that there are conditions under which a speed of 10 miles an hour is far more dangerous than 40 miles an hour

New Board Track Ready in March

LOS ANGELES, CAL., Feb. 11—It is anticipated that the new 1-mile board track which is being constructed near this city will be completed by March 10, so rapid has its progress been. As laid out the track is a true circle 1 mile in circumference, and its exact proportions are hard to gauge from the architect's designs, but according to Jack Prince it signifies that in a straight line 500 feet long the arc from the center deviates about 24 feet

under other conditions. These regulations take into consideration not only speed with reference to existing conditions, but the care and skill of the driver.

"I believe the motoring associations can render invaluable service by throwing the weight of their influence actively on the side of the safe and sane use of the public road. The great majority of car owners condemn the speed mania and reckless driving, and many associations have officially placed themselves on record for a conservative use of the road. In my judgment, much unwise legislation is being indulged in both in relation to speed and taxation of the motor car, which will have to be repealed or ignored later on. Excessive taxation and unreasonable speed regulations will only retard the development of motor transportation along the more useful lines.

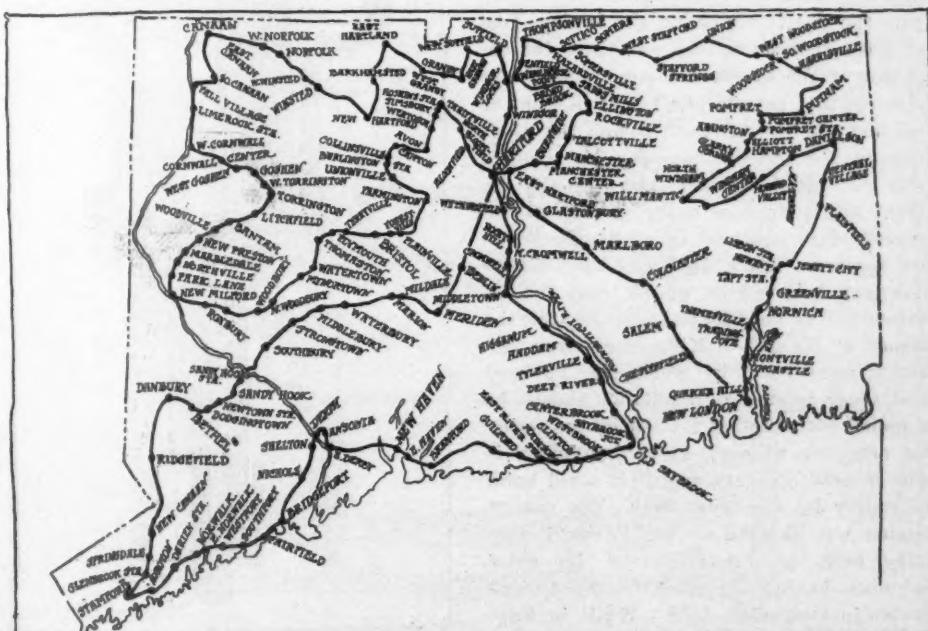
"Legislation now against a rich man's toy may later on be against a poor man's economy. The only points of superiority which this new means of transportation possesses over the horse-drawn vehicle are power and speed, and it is only by the exercise of these agencies that it can be useful to man. The dust nuisance did not originate with the motor vehicle."

There were several other addresses on miscellaneous topics by delegates.

from a straight line, the track being a sheer 40 feet from the bank exclusive of a 10-foot inside freeboard which is flush with the bottom of the course. The banks are uniform, the entire circumference of the course and the outer edge is 14 feet 6 inches high, making a gradient of approximately 1 foot all around. The surface is made of 2 by 4-inch planks laid on edge and running lengthwise. The boards are held together in a peculiar way so that when the track is completed it will to all intents and purposes be a solid surface. Indeed, the designer claims that if the entire underpinning should be taken out the track would stand as if cast in wood. The track will be lighted by seventy arc lights of 4,000 candlepower each, placed 40 feet high on the outside bank. The grand stands are elevated 4 feet above the track and are 4 feet away, the intervening space being a promenade for the public.

CONNECTICUT ROUTE LAID OUT

Hartford, Conn., Feb. 14—The final dates of the forthcoming all-Connecticut endurance run, which is to be held under the auspices of the Automobile Club of Hartford, have not been decided upon. May 1 is the date named by the American Automobile Association, but this date is too early for the Automobile Club of Hartford and while no definite promise has as yet been received by the contest committee it is the general opinion that the dates desired by the club, that is May 19, 20 and 21, will be conceded by the national body. The route as now laid out which covers 3 days' travel touches the border of New York state within $\frac{1}{2}$ mile, to within 3 miles of the Massachusetts border and within 4 of the Rhode Island border and in some places the route lies along Long Island sound. The referee of the event will be Lewis A. Speare.



ROUTE SELECTED FOR THE ALL-CONNECTICUT RELIABILITY RUN NEXT MAY

KNIGHT ANSWERS PACKARD PATENT CLAIM

CHICAGO, Feb. 15—Editor Motor Age —Claims made by a representative of the Packard Motor Car Co. in Motor Age last week that it owns basic patents on sleeve-valve engines for the United States, and that the Knight engine is an infringement of patent No. 12,991, reissued to Sidney A. Reeve on July 13, 1909, contains so much that is untrue and omits so much that is true, and the intention to intimidate and deter other manufacturers from taking licenses to manufacture Knight engines in the United States is so manifest, following, as it does, a veiled threat of the Packard attorneys, in their letter to us of October 30, 1909, that they "should prevent the issuance of any claims to Knight by the United States patent office" if Knight & Kilbourne did not accede to its demands, that in justice to Knight and Kilbourne and the motor industry of the United States I cannot permit it to pass without giving a history of the entire transaction.

Mr. Knight, at the time this Packard interview was published, was on the ocean bound for England. In the absence of Mr. Knight the duty devolves upon me to answer this attack, and while I cannot hope to do the subject the justice that Mr. Knight could, I will endeavor to show the attitude of the Packard company by a plain statement of what transpired between it and Knight & Kilbourne. For a proper understanding of what has occurred a brief history of the Knight engine and its success is, I think, essential.

First Announcement in 1908

The formal announcement of the adoption of the Knight engine by the Daimler Motor Co. of England was made in September, 1908. Within 60 days after this announcement a number of leading motor car manufacturers of the United States had representatives in England to investigate the merits of the Knight engine. One of these representatives was the chief engineer of the Packard company, who was received and entertained by Mr. Knight at his home in Coventry. Through the kindness of the Daimler company Mr. Knight was permitted to take him through its plant and show him every process in the manufacture and testing of Knight-Daimler engines. Mr. Knight and the Daimler company believed he would treat the information as confidential and respect the rights of Knight & Kilbourne. Arrangements were made by which the Packard and other interested companies should be supplied with engines for test by the Daimler company at cost, at a time when it was in need of every engine it could build to supply its own customers. The sample engine was shipped to the Packard company early in January, 1909, its chief engineer having returned to the United States in December, 1908. While in England he visited the motor car show in London, where he saw the tremendous sensa-

EDITOR'S NOTE—This defense of the status of the Knight sleeve-valve motor is by F. E. Lomas, attorney for Knight & Kilbourne, owners of the Knight patents, and is in reply to a statement given out by a Packard representative and published in last week's Motor Age to the effect that the Packard Motor Car Co., by owning the Reeve patents governing slide valve mechanisms, controls the slide valve situation in America.

tion created by the exhibition of the Daimler and Minerva cars equipped with Knight engines, these two companies monopolizing the attention of all visitors. He also was informed that Panhard & Levassor had secured an option for the French rights to the Knight engine, and that negotiations were under way with the Daimler Motoren Gesellschaft, the famous German firm founded by Gottlieb Daimler, and the manufacturer of the Mercedes cars, for the German rights.

A Significant Fact

Particular attention is directed to the significant fact that, according to the certified copy of the Reeve reissued patent, Reeve, on February 9, 1909, within less than 2 months after the return of the Packard engineer from England, and within less than 1 month after the receipt of the Knight engine, made affidavit to an application for a reissue of his patent No. 880,824, of March 3, 1908. The fact, admitted to us by the attorneys of the Packard company who had charge of the mat-

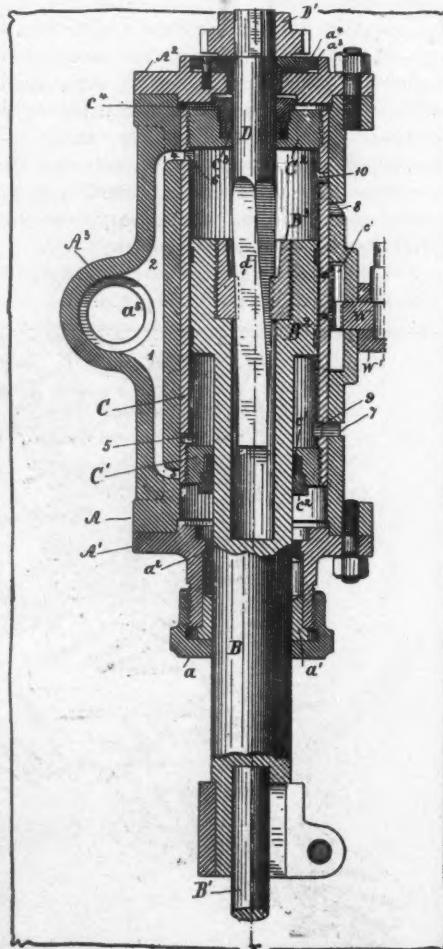
ter, that this application for a re-issue was made by Reeve at their instigation, and under their direction and supervision, through a New York patent attorney in order that the connection of the Packard company might not be known, furnishes illuminating evidence as to the reason for Reeve's assertion that he had not claimed in his original patent all that he had invented. It also furnishes illuminating evidence that he had not discovered, until then, what Knight had invented. As to the validity of the Reeve reissue and the methods by which it was secured, I call attention to the facts, and a few decisions of the United States supreme court which, I think, will show a reader unlearned in the law the Packard claims are unfounded.

It is a significant fact that when the Packard company advanced its claim to the Knight invention, under the Reeve patent, it did so in connection with the Knight drawings instead of the Reeve drawings. In order that the public may judge for itself, we furnish herewith a photographic copy of Knight's patent office drawing and a copy of the main drawing of the Reeve patent.

Descriptions of the Knight engine have been published. In a word, it consists of two telescoped sleeves, both having ports, and each receiving a definite valving motion from an eccentric properly timed according to the four-cycle principle and operated from the crankshaft. Both sleeves slide within the main cylinder, which has a fixed head projecting down into the inner sleeve and carrying the spark plug. This head closes both the intake and exhaust ports of that sleeve. The piston performs its usual working stroke entirely within the inner sleeve. During the compression and explosion strokes, the inner sleeve is hermetically closed above by the fixed head and below by the piston, so that the charge is fully compressed without loss, and when the explosion occurs its full force is exerted directly against the piston in a perfectly cylindrical combustion chamber having neither side chambers nor crevices to detract from the force of the explosion or to catch accumulations of carbon.

The Reeve Device

The Reeve device is described as a steam engine of the double-acting horizontal type. The piston 6 works in a sliding cylinder 5 arranged in a casing 1 which constitutes the steam chest or head chamber. This sliding cylinder is not operated by an eccentric or other positive means, like the Knight inner sleeve, but is caused to slide endwise by the friction of the piston, so that when the piston starts to move in one direction the sleeve will slide therewith and cause its exhaust port 70 in one end or the other to register with one of the exhaust ports 10 in the casing or steam chest to permit the steam to escape from the forward side of the advancing piston. All this is common practice and well known in the steam engine and hydraulic engine arts. In the outer ends of this sliding cylinder 5, however, Reeve places two piston valves 15, which are adapted to close the inlet ports 120 of the sliding cylinder when a spring 119 behind each piston valve forces it inward, and the sliding cylinder 5 is forced towards it by the friction of the piston as the piston moves in that direction. The pressure for moving the piston



UREN U. S. PATENT No. 303,344, AUGUST 12, 1884

is exerted between the piston valve 15 and the piston, and during the working and exhaust strokes the piston valve is held from moving outward by a latch device which is supposed to let go at the proper time during the return stroke of the piston to permit the steam that has been compressed between the piston and the piston valve to force the piston valve outward against the spring and cause the piston valve to slide out from under and again open the inlet port in the sliding cylinder 5. Whether or not such a contrivance would work even as a steam engine never has been demonstrated, for according to the admission of the patentee, an engine made upon this principle never has been built.

Reeve shows two forms of his device, one of which is constructed as above described. The other is the same, excepting that he has supplied the sliding cylinder 5 with an auxiliary valve 121 at each end for the common purpose of cooperating with the piston valve 15 in cutting off the cylinder admission more economically than could be done by means of the piston valve alone. This auxiliary cut-off valve is found in the steam engine art in various forms, that is, as piston valve, flat slide valve, ring valve and sleeve. Reeve has chosen the ring form, which he places around each of the protruding ends of the sliding cylinder 5, and which he says he operates from the crankshaft by an eccentric in the usual way, although he does not show the eccentric or operating means. A detailed comparison is unnecessary to convince the thinking engineer that whatever merit the Reeve device may possess as a steam engine, it could not, even by any possible distortion, be converted into an internal explosion engine, nor could the terms which have been applied to the elements of the Knight structure possibly mean the same thing when applied to the Reeve structure, or vice versa.

Has Attracted Attention

The combination of elements which constitute the sleeve-valve internal explosion motor apparently has caused the world to sit up and take notice, but there was no new result or effect produced by the alleged improvements Reeve made in the steam engine. It was common in the steam engine art years before Reeve's invention, as shown by the United States patent of Uren, No. 303,344, issued August 12, 1884, to have the main piston B' slide in a sliding cylinder C contained within a casing or main cylinder A and having ports adapted to register with ports in the casing for controlling the cylinder admission and exhaust, the internal sliding cylinder being moved by the friction of the piston, as in the Reeve patent, and it was also old in hydraulic motors, as shown in United States patent No. 352,797 of Baldwin, November 15, 1886, to provide the internal sliding cylinder K with an auxiliary cut-off valve 1, 2, 3, 4 encircling each end in the form of a ring and controlling the admission ports, 4, 4' in the sliding cylinder K. In this Baldwin patent these cut-off valves are connected together so as to move in unison by a cylinder W surrounding the internal cylinder K, and both of these cylinders are contained within a main cylinder or casing G having an inlet port Z. The cut-off valves 1, 2, 3, 4 receive definite motion from a valve operating rod N, just as in the Reeve patent. The piston in this Baldwin patent is shown at J, and while it is the main piston it also serves as two piston valves for controlling the exhaust ports M, M' in the internal sliding cylinder.

To apply these cut-off valves of the Baldwin patent to the Uren steam engine, or to use steam in the Baldwin engine instead of water was mere child's play. Every steam engineer understands the uses of the cut-off valve, and should any steam engine structure require one, he has a large number of examples in the art from which to choose, and there could be no possible invention in his choosing the ring form of Baldwin for use on the Uren form of steam engine, nor for importing into the Baldwin engine Uren's specific form of sliding cylinder and working piston for Baldwin's specific form of sliding cylinder and working piston. These are only some of the examples in the prior art of Reeve's alleged improvements in steam engines.

Other Reasons Given

But these are not the only reasons why the Reeve reissue patent is of no force and effect to cover the Knight invention. When we examine into the conduct of the present owners of the Reeve patent their efforts to obtain a reissue for the express purpose of covering the Knight engine after they were aware that the rights of Knight & Kilbourne had intervened and that a large fortune had been expended by these gentlemen in the development of the Knight motor, and when we examine

the records of the patent office relating to the Reeve original and reissue patents and find that the reissue covers a different invention from what was covered in the original, there is nothing left to be said in favor of the Reeve reissue patent, even if it be assumed that it is not completely anticipated or void in view of the prior art. The law on this subject of intervening rights and the reissuance of a patent to cover an invention not originally intended to be covered in the original patent, is so clear and the points have been so repeatedly decided by the United States supreme court and the United States circuit courts of appeal as to leave no room for even a shadow of doubt.

As we have before pointed out, Reeve shows in his drawings two forms of the steam engine. In one of these he employs the ring valve around the main cylinder valve as an auxiliary cut-off. In the other form this cut-off valve is omitted entirely. It is important here to note that the form employing the cut-off valve is the only form using an eccentric for the operation of either valve, and in that form it is used for operating the cut-off valve. Now, Reeve in his original patent made this statement:

The principal advantages of my invention as applied to steam engines are * * * —6— The elimination of eccentrics as transmitters of power for operating valves.

It is seen from this statement that any steam engine having an eccentric for operating the valve would not possess the advantages of the Reeve invention. The present owners of the Reeve reissue also saw this and fully appreciated the fact that the Reeve original patent claimed a structure in which no eccentric was employed, and consequently must have claimed the form of the Reeve engine which does not contain the outside auxiliary or cut-off valve. Therefore when applying for the reissue patent they adroitly omitted from the specification the statement of advantages above quoted so as to be able to direct the claims of the reissue to the

form of the engine having the outside cut-off valve operated by an eccentric. Consequently the reissue is for a different invention from that which the patentee intended to cover by the original. The United States circuit court at Chicago in the case of Chicago Railway Equipment Co. vs. Perry Sidebearing Co., 170 Fed. Rep. 968, recently has settled these questions in a very exhaustive opinion, and this decision has been sustained by the United States circuit court of appeals and enforced against the reissue even to greater limits. In this decision the court said:

Thus it is sought by the language of the reissue claims to broaden the limited claims of the original patent into claims covering the whole field. * * * It seeks to bring within the monopoly of its patent side bearings not apparently in mind at the time of filing the original application. * * * It can hardly be claimed that the original patent was not a complete device. It was operative just as completely as that of the reissue patent. For all that Wands was seeking, it was in itself a finished side bearing arrangement. Later he thought he could just as well claim the resilient centering device and make it apply to every friction side bearing which is centered by a spring. Undoubtedly he made the mistake of not claiming the larger invention, if it be such, in his first application; but this is not the mistake the statute and the courts have in mind. Authorizing the grant of reissue patents.

Supreme Court Decision

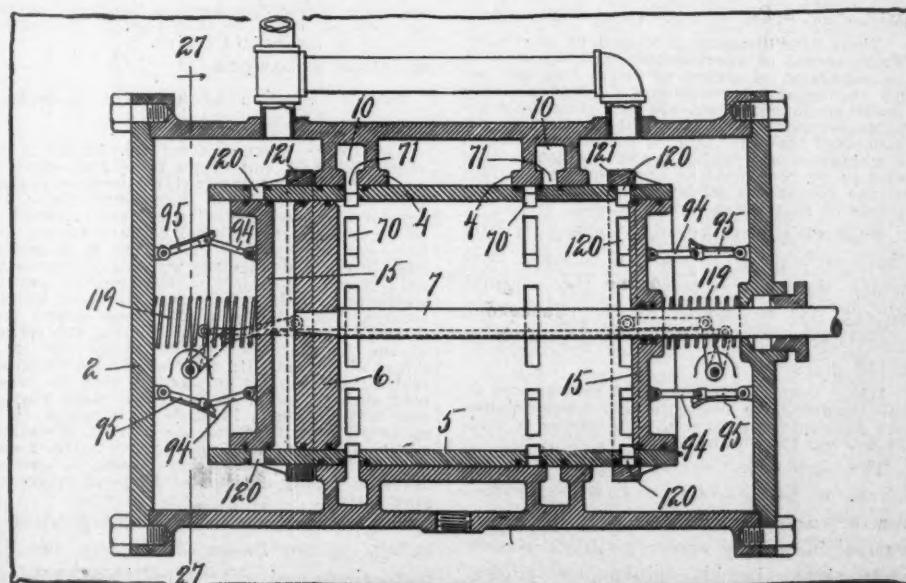
In Campbell vs. James, 104 U. S. 356, the United States supreme court said:

When a patent fully and clearly without ambiguity or obscurity describes and claims a specific invention complete in itself so that it cannot be said to be inoperative or invalid by reason of a defective or insufficient specification, a reissue cannot be had for the purpose of expanding and generalizing the claim. *

The United States supreme court, in Burr vs. Duryee, 1 Wall 531, 17 L. Ed. 650, said:

The surrender of valid patents and the granting of reissue patents thereon with expanded or equivocal claims, when the original was clearly neither inoperative nor invalid, and which specification is neither defective nor insufficient, is a great abuse of the privilege granted by the statute and productive of great injury to the public. This privilege was not given to the patentee or his assignee in order that the patent may be rendered more elastic or expansive, and therefore more available for the suppression of all other invention.

The United States supreme court in Corbin Lock Co. vs. Eagle Lock Co., 150 U. S. 42, in condemning the practice of broadening the claims to include an ele-



REEVE RE-ISSUE No. 12,991, JULY 13, 1909

ment not originally covered, but merely described and shown in the drawing, states:

It is settled by the authorities that to warrant new and broader claims in a reissue, such claims must not be merely suggested or indicated in the original specification, drawings or models; but it must further appear from the original patent that they constitute parts or portions of the inventions which were intended or sought to be covered or secured by such original patent.

The force of this decision is clearly apparent, since Reeve intended by his original patent to cover a steam engine in which there would be no eccentric for operating the valves, whereas in his reissue patent it became necessary to claim the eccentric operated valve in order to establish a color of right to the Knight invention.

Re-Issue Held Invalid

In *Huber vs. Nelson*, 148 U. S. 270, the United States supreme court held the reissue invalid because it left out one of the elements of the original claims.

In *Chicago Railway Equipment Co. vs. Perry Co.*, above referred to, the United States circuit court at Chicago, in speaking of the effort of the reissue patentee to enlarge his claim by omitting an element originally described as important, states:

These two things are vital elements of that patent. Now it is sought by reissue to drop out the distinctive feature of the patent as described in the claims and substitute another element.

This comment is pertinent because Reeve seeks by his reissue to drop out the statement contained in the original making essential the form of his engine in which no eccentric is employed for operating the valves, and then to specifically cover this eccentric form by his reissue claims.

The United States circuit court of appeals in New York in the case of *Carpenter Co. vs. Searle*, 60 Fed. Rep. 82, laid down the rule to be the same rule as announced in the *Chicago Railway Equipment Co.* case, that:

Unless the court can find that the invention of the reissue is described as the invention in the original, and that the patentee intended to secure it as his invention in the original, the reissue is invalid. It is not for the same invention.

The United States supreme court, in *Miller vs. Brass Co.*, 140 Otto. 350, said:

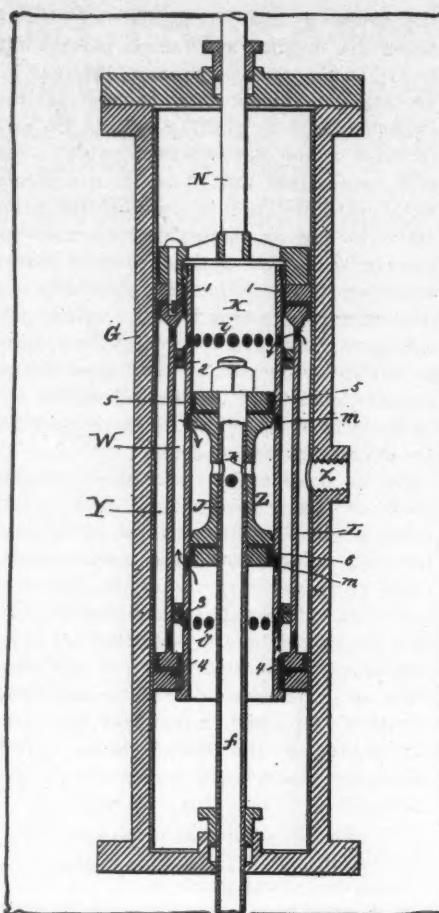
These afterthoughts developed by the subsequent course of improvement, and intended by an expansion of claims to sweep into one net all the appliances necessary to monopolize a profitable manufacture, are obnoxious to grave animadversion. * * * But it must be remembered that the claim of a specific device or combination and an omission to claim other devices or combinations apparent on the face of the patent are, in law, a dedication to the public of that which is not claimed.

Regarding intervening rights, or the rights of a party to continue to make that which was not covered by the original patent, but is covered by the subsequent reissue, the United States supreme court holds that:

When complainant delayed 6 months and in the meantime the subject of the reissue claims has gone into general use, such reissue is void. *Parker vs. Yale*, 123 U. S. 87.

The explosion engine expert, Dugald Clerk, of London, England, who testified for the successful party in the Selden litigation, in passing upon the Reeve reissue states it to be his opinion as follows:

The Reeve devices are, in my view, utterly incapable of being applied to any internal com-



BALDWIN U. S. PATENT 352,797, NOVEMBER 15, 1886

bustion engine, and indeed there is no suggestion of any such application in any way found in the Reeve patent. * * * In my view, it could also be freely contended that the reissue claims do not properly cover the same invention as was found in the original patent before reissue. * * * and in my view no action for infringement on the Reeve patent, as reissued, could be successful in restraining the use of the Knight engines; * * * and in my view, the owners of the Knight patents have nothing to fear from the Reeve reissue, which may be entirely disregarded in dealing with licensees under the said Knight patents.

In speaking of the Reeve structure and the reissued claims advanced by the Packard company, he further says that the same are:

Invalid for want of novelty, and in my view no action for infringement on the Reeve patent, as reissued, could be successful in restraining the use of the Knight engine.

Opinions of Lawyers

In the opinion of eminent American counsel:

The Reeve reissue patent No. 12,991 is invalid and void and of no force and effect to cover the Knight internal combustion engine, for four reasons: First, the reissued claims are not for the same invention as that intended to be covered by the original claims; second, the very extensive rights of Knight & Kilbourne have intervened since the granting of the original; third, the claims of the reissued patent, wherever sounding in terms like the Knight construction, are old in the steam engine and hydraulic engine arts; and fourth, the claims of the Reeve patent do not mean the same thing, when read with reference to the construction of the Knight engine, as they do when read with reference to the Reeve steam engine, and when attempt is made to construe them so broadly as to cover the Knight invention, which did not exist until years after Reeve applied for his patent, they became so general as to be readily anticipated by prior steam engine devices.

While the Reeve reissue was pending I called on the Packard company two or three times and met its president, general manager and chief engineer, all of whom

seemed greatly interested in securing information regarding the Knight engine and its progress in Europe, but they did not drop a hint that they were using the confidential information given them in formulating claims covering the Knight construction for the Reeve reissue.

Foreign Deals Made

During the summer of 1909 I returned to Europe, where arrangements were made with the Daimler Motor Co., Minerva Motors Limited of Belgium, Panhard & Levassor of France and Daimler Motoren Gesellschaft of Germany, all of which had options for exclusive licenses for their respective countries, by which if they subsequently exercised their options and took final licenses, which all have since done, they would accept a uniform license then agreed upon, which provided that all licenses should pay the same royalties, and in the event of any reduction in the rate to any licensee all should immediately receive the benefit of such reduction. This license, with a few modifications to make it conform to American legal conditions, was mailed to the Packard company on behalf of Knight & Kilbourne early in August, 1909, with a request that further negotiations be taken up with Mr. Kilbourne at Chicago. About the same time I returned to the United States to participate in the anticipated negotiations with the Packard and other companies. No word was received from the Packard company until October 19, 1909, when it wrote Mr. Kilbourne it had received a copy of the proposition relative thereto if he could come to Detroit on October 26. Mr. Kilbourne and I called at the Packard works in Detroit on October 26, and were received by its chief engineer, and introduced to its local patent counsel, Milton Tibbetts, and its general patent counsel, James S. Watson, of Washington. Both the president and general manager of the Packard company were out of town.

Mr. Watson stated that, on behalf of the Packard company, they had made the most exhaustive search they knew how, and that this search revealed nothing that affected the Knight construction except the Reeve patent. I said to Mr. Watson that I did not see how an internal combustion engine could be built in accordance with it which would work. Mr. Watson said that probably was true.

I asked whether he was speaking for the other companies which originally had invited the Packard company to join in the negotiations for the Knight patents, and he replied he was not; that he represented the Packard alone and that it was the sole owner of the Reeve patent, and none of the others knew of it. Mr. Watson said they would be willing to turn the Reeve patent over to us for a half interest in all royalties received in the United States.

Mr. Huff, Packard engineer, thought it eventually would be found necessary to permit other manufacturers to have licenses for such a valuable thing, as it would

seriously injure their business if they did not have it, and in the event of our refusing licenses many would use the Knight engine anyway and risk the chances of litigation, and we would have the Selden situation repeated. Neither Mr. Kilbourne nor I gave any intimation of our attitude toward their proposal, and stated we would have the Reeve patent examined by our patent attorneys and see them again. Mr. Huff told us he intended leaving for England on November 3 to attend the Olympia show in London and would see Mr. Knight. This he did, and, as I was informed by Mr. Knight, he again came to Coventry and was entertained at Mr. Knight's home, shown the same courtesies at the Daimler works, given the freedom of the plant and much confidential information, and at the Olympia show again saw the success of the Daimler and Minerva exhibits with Knight engines. He was also given the information that the Daimler company had, during the first 9 months of its use of the Knight engine sold and delivered about 850 cars, and in the 6 weeks between the end of its fiscal year, September 30, 1909, and the opening of the Olympia show, November 12, had sold more cars for delivery this year than its entire sales last year; that the Minerva company had sold its entire output for next year before the opening of the show, and that Panhard & Levassor had exercised their option to take a final license and were straining every nerve to get cars with Knight engines on the market at the earliest possible moment, and that before exercising their option they had sent one of their directors to England to ascertain how the public regarded the Knight engine after a year's use by purchasers of Daimler cars, and that when he asked their English agents, Messrs. Ducros, how many cars they would order if they adopted the Knight engine, the latter replied they did not care to specify any definite number, but would take all the factory could produce, but could not sell any more cars with poppet valve engines. Mr. Huff cabled his company that Panhard & Levassor had taken a final license and obtained a copy of this for the Packard company.

Premiums Offered in Europe

Mr. Huff, as I believe, also was informed that so great was the demand that Messrs. Ducros were charging a premium of \$300 for Panhard cars with Knight engines above the price of cars with poppet-valve engines, which Panhards were compelled to manufacture until they could prepare plans and patterns for other Knight models. He was also told by Mr. Knight that the option held by the Daimler Motoren Gesellschaft would be exercised before its expiration on January 1, 1910, which was done early in December, 1909. With all this information as to the success of the Knight engine in Europe Mr. Huff came back to the United States. I state this to refute the intimation contained in the statement of the Packard representative

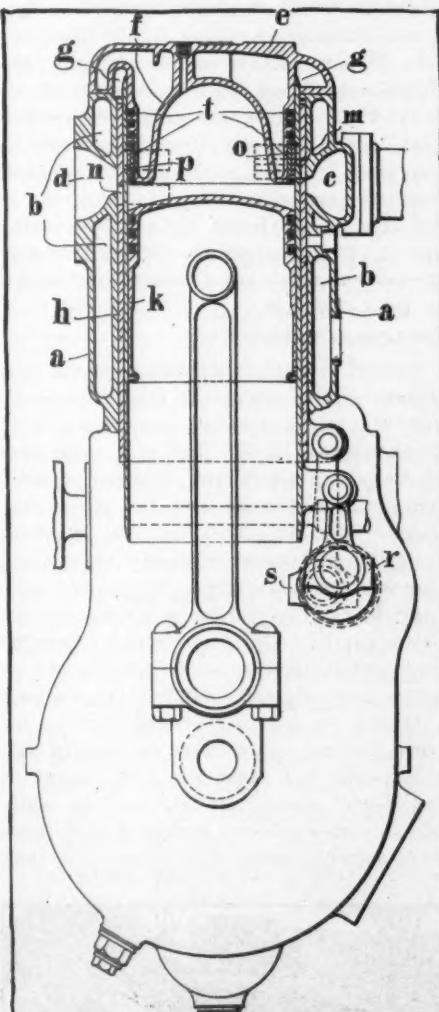
that it has no special interest in sleeve-valve motors more than as a matter of experiment such as with many other things that have never been adopted. On the page immediately following the interview with the Packard representative in the Motor Age of February 10, 1910, in an article from the Belgian correspondent of Motor Age on the Brussels show, appears the following:

The car which is undoubtedly the feature of the show is the Minerva, with its American motor, the Silent Knight. Last year for the first time this valveless motor was shown and attracted a good deal of attention. It was, however, an untried novelty. During the past year a large number of Minerva cars with this motor were sold and their success is almost beyond belief. As a result the 1910 Minerva output already is disposed of, and considering the fact that 600 cars, or rather chassis, are being constructed, it is a fact well worth mentioning, considering this small country. While plenty of native makers only laughed at the American Knight last year and predicted a failure for the Minerva, there are many who would be glad to pay a fortune this year in order to be allowed to fit the Knight to their chassis.

"We have to refuse orders from now on," said a Minerva agent to the Motor Age correspondent. "Premiums of 1,000 francs are offered in order to get cars, but we cannot accept them. The plant in Antwerp will turn out 600 chassis this year, by far the biggest output of any Belgian motor car builder, and it is not possible to hope for more. We could sell several hundred more, but it is a question of quality and not quantity with us."

Quotes a Packard Letter

But let us see what the Packard company had to say on this subject. I quote from a letter written by Mr. Watson to



KNIGHT'S PENDING APPLICATION

the Packard company, dated January 4, 1910, a copy of which he sent me:

At the end of our interview Mr. Lomas asked if the Packard company was interested in securing a license under the Knight patents, or only interested in disposing of the Reeve patents. We assured Mr. Lomas that the Packard company was interested in obtaining a license under the Knight patents if a suitable license could be had upon reasonable terms and the Reeve patent negotiated as a consideration in whole or in part for the license.

As to the intimation that Knight can obtain no United States patents, I quote from a letter from the chief patent counsel of the Packard company under date of November 4, 1909, as follows:

We have asked Messrs. Brown & Hopkins to give us some assurance in writing that they will not bring the Knight United States applications to allowance while our negotiations concerning the Reeve patent are pending. You understand fully the reasons for this request, and we will be obliged if you will authorize Messrs. Brown & Hopkins to give us this assurance.

To this I replied on November 9 that Mr. Hopkins had written that no further action on our applications was due for 2 or 3 months, during which time we would have ample time to examine the Reeve patents and discuss the matter with him and his clients. On November 24, 1909, I wrote the Packard company as follows:

Referring to the conference we had with Mr. Watson and Mr. Tibbets regarding the Reeve patent, we beg to advise that Messrs. Brown & Hopkins, our patent attorneys, have proceeded far enough with their examination to enable us to form an opinion as to the value of the reissued patent, and we confess to some disappointment as to its having much, if any, value in affording us broader protection. The circumstances under which it was reissued, and the fact that it seems to be in greater part anticipated, leaves little hope that it will be of any assistance in this respect.

On November 26, the Packard company wrote asking an appointment for December 4 in Detroit, and it was suggested that we send the Packard attorneys authority to examine Knight's patent office files, which authority was duly mailed. Mr. Kilbourne, Mr. Hopkins and I went to Detroit December 4 and met the Packard attorneys. Mr. Hopkins showed them an English patent which had been sent us by Marks & Clerk, our London patent counsel, to whom copies of the Reeve original and reissue patents had been delivered by Mr. Knight with instructions that they make a search to ascertain the validity of the Reeve patents. This patent anticipates a large number of the Reeve claim, and we informed Mr. Watson that others were on the way. It was admitted at this conference, which lasted a couple of days, by Messrs. Watson and Tibbets that immediately after the return of Mr. Huff from Europe in December, 1908, they began their search at the United States patent office, and that this examination was made principally by Mr. Tibbets, who discovered the Reeve patent, and that negotiations were at once commenced with its owners for an exclusive license provided a reissue could be secured with claims covering the Knight construction. Mr. Watson frankly admitted that the circumstances under which the Packard company had obtained it, and the use of the information we had furnished as the basis for the preparation of the claims incorporated in the reissue would not meet the approval of a court of

equity; he stated that while it might not be strong as a weapon against us in their hands it would be a powerful club in our hands to use against others, and an additional protection for the Knight patents. He said the defenses we could make to it could not be made by others if we held it, and that we could use it as a basis to make licenses and collect royalties at once from American manufacturers, and hold our own patents in the patent office as long as possible. Mr. Hopkins said he had not yet made a search for anticipations of the Reeve patent, but that the circumstances under which it had been reissued were such that the same defenses could be urged against it in our hands as in theirs, because their connection with it would have to come out. Mr. Watson said their license had not been recorded in the patent office, and he suggested that they destroy their license and all evidence of it and cause a conveyance to be made direct to us from the owners of the Reeve patent. Mr. Hopkins said he would not ask anyone to pay royalties under the Reeve reissue, nor did he believe that anyone would be foolish enough to do so. He said that it could not be used to construct an internal combustion engine, was never intended as such, and that in the reissue the original specification and purpose had been changed and greatly broadened and that the courts would be sure to declare it invalid, even if it were not clearly anticipated by others, which he felt sure was the fact.

The Packard attorneys at this conference wanted us to give them a free license and 10 per cent of all American royalties for the Reeve patent. We replied that we could not do that even if we were satisfied the Reeve patent was good, which we certainly were not, because, as they knew we had opened negotiations with three companies in America, which were acting with them, and that our European licenses, as well as those submitted to the American companies contained a clause that all licensees should pay the same royalties and that this situation would have to be divulged, as they were all entitled to see the contracts made with others. Mr. Watson suggested that they would execute the same form of license, and we could arrange to repay through a trustee the royalties paid by them or they would put it in any way we might suggest in order to conceal the real facts from other licensees.

Dugald Clerk's Report

On December 30, 1909, the Packard attorneys came to Chicago, a copy of Dugald Clerk's report on the Reeve patents having been previously furnished them. At this meeting they were told the Reeve patent



was wholly anticipated by prior patents which were submitted, and the claims were taken up one by one by Mr. Watson and Mr. Hopkins, the most of which even Mr. Watson admitted were anticipated.

As to whether the Packard company is interested in sleeve-valve motors and desires a license from Knight, I quote from Mr. Watson's letter of January 11, 1910:

We submit the following proposition:
1—The Packard company to assign to Knight & Kilbourne all of its right under the Reeve reissue patent and to receive as a consideration 5 per cent of the gross royalties derived from licenses under the Knight and Reeve patents, plus an amount equal to 75 per cent of all royalties which the Packard company shall have to pay for its licenses under the Knight and Reeve patents, the minimum royalty payable to the Packard company under this arrangement to be \$10,000 per annum for the first five years, or an amount equal to the minimum royalty provided in the license which the Packard company shall take under the Knight and Reeve patents.

Or
2—The Packard company to assign all of its right under the Reeve patent to Knight & Kilbourne and to receive 20 per cent of the gross royalties received by Knight & Kilbourne from licensees under the Knight and Reeve patents or any of them; the minimum royalty payable to the Packard company under this arrangement to be \$10,000 per annum for five years, or an amount equal to the minimum royalty which the Packard company shall be required to pay Kilbourne and Knight by the license under the Knight and Reeve patents.

On January 14, 1910, Mr. Watson and Mr. Tibbets called on Mr. Knight, Mr. Hopkins and I at the Herald Square hotel, New York, and endeavored to secure further concessions. Mr. Hopkins, meanwhile, had made a search which disclosed a number of American anticipations which in his opinion completely destroyed the validity of the Reeve patent, and we therefore declined to make any concessions or accede to their demands.

Conference in New York

Balked in its attempt to secure a free license and a share of American royalties, the Packard company next appeared in the person of Mr. Joy at a conference in New York which was arranged between Knight & Kilbourne and the other companies who, together with the Packard company had been originally negotiating for the American rights, he having been invited, as I am informed, by one of the other parties. We had in the meantime disclosed to these other companies, one of whom had originally invited the Packard company to join in the negotiations for the American rights under the Knight patents, what had happened with regard to the Reeve patent. At this meeting, while Mr. Joy was present, Knight & Kilbourne were asked to name a price at which they

would sell their American patents, which they declined to do. The next we heard from the Packard company was the statement by a representative in last week's Motor Age. The policy of the Packard company in trying to not only acquire a free license under the Knight patents but to make the other manufacturers pay tribute to them through Knight & Kilbourne having failed, it has resorted to attempted intimidation. I may say for its information that contracts have been made by Knight & Kilbourne with foreign licensees which will bring them an income of about \$300,000 per year, and I can assure it that such part of that amount as may be necessary will be spent in protecting their American rights.

Welcome a Suit

In conclusion, I am expressly authorized by Knight & Kilbourne to say that they wish to make it extremely easy for the Packard company to carry out its implied threat of bringing suit for infringement, and testing its alleged rights under the Reeve reissued patent, and for that purpose they authorize me to say on their behalf that they are now and since the year 1904 have been continuously engaged in manufacturing and selling Knight engines, and since July 13, 1909, the date of the Reeve reissued patent, have been engaged and are now engaged in manufacturing and selling, and since that date have manufactured and sold Knight engines of the type shown by the drawings in last week's Motor Age, and they propose to continue doing so. That such manufacture and sale has been and is now being carried on at 1238 and 1240 Michigan avenue in the city of Chicago, county of Cook and state of Illinois, and in the seventh judicial circuit of the United States, whose courts have jurisdiction of patent litigation and infringements, and at the above address Knight & Kilbourne will be pleased to accept service in a suit for infringement brought by the Packard company under the Reeve reissued patent No. 12,991, and if such suit is brought will afford the Packard company every facility in their power to bring same to a speedy hearing and determination. I am further authorized to say on behalf of Knight & Kilbourne that not only is the Packard Motor Car Co. invited to bring such a suit but it is challenged to do so, and its failure so to do will be construed by Knight & Kilbourne, as it doubtless will be by the public, as an admission on its part that it has no rights that are being infringed by Knight & Kilbourne, and that it has not the courage to present such a flimsy case to a court of competent jurisdiction.—F. E. Lomas.



MOTOR TRADE TIPS FURNISHED BY UNCLE SAM

WASHINGTON, D. C., Feb. 14—The following report covering the market for motor cars and traction cars in Portuguese East Africa, transmitted by Consul George A. Chamberlain, of Lourenco Marquez, contains interesting information concerning the conditions which prevail in that colony and the cause why American cars are not in more general use in foreign markets:

Up to a few years ago the streets of the city of Lourenco Marquez, the capital of Portuguese East Africa, were mere rivers of sand, and transportation by motor car seemed as far off as aerial navigation. The white man was hauled laboriously through the sand in rickshaws, and women went shopping swung from Kaffir-borne poles in hammocks known as mechillas. During the last decade, however, wonderful changes have taken place, so that today Laurence Marquez has 40 miles of macadam streets, with promise of more to follow. Sand is the curse of Portuguese East Africa. It blocks the rivers and harbors and stretches in a vast sea toward the interior, effectually cutting off the coast towns from the highlands. Besides, it makes the problem of transportation the bugbear of the planter.

The stone for macadamizing the streets of Lourenco Marquez was brought 50 miles by rail from the borders of the Transvaal, and the hauling from the local station to the place of application cost more than the quarrying, crushing, and transportation by rail put together.

The transport problem of the district is further complicated by the diseases that have decimated the cattle and horses all along this coast. He who buys a horse takes an 8 to 1 chance of burying him within a year. Horse sickness defies the most careful nurture, and is still, in every feature, a mystery to science. It is said that only 2 per cent of the stricken recover. As to cattle, the danger of loss is no less, as the mere fact of the infection of a district condemns a farmer to the disposal of his entire stock. The situation resolves itself into a choice between motor cars and donkeys, and in Lourenco Marquez and vicinity the motor cars are winning. Of the motor cars already here, one is of American make and would cost at home about \$750, but so strangely do our manufacturers arrange their export business that the middleman's commissions and duties brought up the cost of the car to the local purchaser to about \$1,400. During the present month—November, 1909—four motor cars have made their appearance on the streets of Lourenco Marquez, and a lorry of very special construction is on the way to start the battle against the 18-inch sand of the suburbs. The lorry was ordered by the local government from a European firm. The contract is most interesting. The purchase price is fixed at

about \$15,000, to be paid in three installments, as the car succeeds in performing the various feats of the guaranty. This guaranty assures, among other things, a carrying capacity of 4 tons through 18-inch sand at 8 miles an hour, a hauling capacity of 8 tons, and the performing of a trip under test conditions to the suburb of Marraquene, 19 miles out.

Demand for Cheap Cars

There is a limited market here for a cheap grade of car suitable for running around town. Four have come in this month, and it is safe to predict that next year will see this number increased by twenty. The market for traction, freight, and agricultural cars, if properly worked, is unlimited. Horse sickness and tick fevers will prove unfailing allies to the manufacturer.

Some American car manufacturers have seen fit to sell their entire export business to New York commission houses. The manufacturer reasons thus: It costs him \$800 to turn out his car. A big commission house agrees to give him \$1,000 per car if it be made sole export agent. He thus makes a solid profit and is free from the trouble of studying export and founding an export department. He signs a contract and thinks he has made a successful deal, but that contract is to a large degree the destruction of his export business. The commission house takes over the car at \$1,000, and contracts agencies with established firms all over the world, fixing the retail price at \$1,500. The agency gets a net sum of \$75 per car sold. Charges, insurance, freight, and duties, say, \$225. The commission house pockets the difference, \$200, just what the manufacturer made on his car.

Limited Agencies Desirable

Anyone can see the dire effects such a line of procedure will have upon American competition abroad. Our medium-priced cars are wonderfully suited for the capture of new markets if they can be sold as medium-priced cars. The only way to assure this is by the establishment of direct limited agencies and undertaking the local advertising. The latter stipulation is unusual, but most important. In the first place, the American conception of advertising is just sifting into the outer world. In the second place, a foreign agent is interested in American goods solely through his pocket. He is swamped with agencies for things that would sell with a little pushing.

Unlimited agencies are a purely American invention which has entrapped many

a careless firm. From a business point of view they are often disastrous. The other day one of our most solid and famous manufacturing firms—not of motor cars—conceded to one man the agency "for territory south of the equator" for a new line of manufacture they were just taking up on a large scale.

Consul Frederick I. Bright, of Huddersfield, furnishes the following statistics covering the various kinds of motor vehicles in use in the United Kingdom:

From a statement, recently issued, based upon official statistics, the following table, showing the number of motor vehicles of all kinds, including public-service cars and motor cycles, in use in the United Kingdom on September 30, 1908, and 1909, has been prepared:

	Total		Private Trade	
	of all kinds	motors	motors	1909
England and				
Wales	137,323	163,181	74,748	13,961
Scotland	10,907	13,093	6,157	1,056
Ireland	6,185	7,499	3,933	164
Total	154,415	183,773	84,840	15,181

The foregoing shows an increase of 29,358 in the total number of vehicles during the last year, which was largely due to the more extended sales in England and Wales. The increase in private cars was 18.8 per cent and in trade cars 25.4 per cent. According to the statistics the number of public-service cars increased 48.8 per cent and motor cycles 15.3 per cent, the number of the latter being given as 75,000. These results indicate an increasing demand for motor vehicles, and especially for cabs for public service and cars used for commercial purposes. It is confidently predicted by many that in a few years the number of business vehicles will exceed those used for pleasure.

As to private cars, there was an increase of about 13,435 during the year. Present indications are that cars of small and medium power will predominate during the coming season. Modern improvements in motor cycles to prevent vibration and noise will assist this branch of the trade, and it is believed that the coming year will witness an increase of 25,000.

There is a large demand for motor vehicles in this district. The public records show the following registered vehicles at Huddersfield: Private cars, 372; trade cars, 43; public-service cars, 8; motor cycles, 116. The total number registered is 539, representing an increase of 96 over the preceding year. The chief feature of the trade in this district and throughout the West Riding has been the introduction of the trade cars, used largely for transportation of textile products.





The Readers' Clearing House



MAGNETO NOMENCLATURE

HONESDALE, Pa.—Editor Motor Age—
1—What does D02, D2, D3R, Da2, DR4, DU4, DR6, D6, D4, HDH, DAV, ARN, AR4, SR, MR, AR3, K23, K23 magneto, K23 make-and-break, K24 magneto, mean in Bosch magnetos, and in all magnetos lettered and numbered the same?

2—In going down hill if my car skids and turns around, facing me uphill, would it not be best to wait until the car faced uphill, then try to start uphill as soon as the car faced that way in order to save it from going backwards or turning again? Of course, no one can tell just what one would do in such a case with a passenger load, but this is what happened to me, and as I faced uphill I put in my clutch, being on low speed. Car owners have advised me that I did wrong, that I should have stopped the car, allowed the passengers to alight, and then try to get up. I say no, for my car may start around, face down, and then I would have a load, might strike a water bar, and then turn over. My idea is to act and think quickly at such a time. What would Motor Age advise in such a case with a seven-passenger load of screaming women.

3—What would cause a hammering in a cylinder after all have been thoroughly cleaned, yet stop when a screw driver is placed on the plug of the hammering cylinder and so connected as to make a spark from the end of the screw driver to the cylinder?—Skidding.

1—Motor Age is unable to explain the significance of all the letters referred to in your first question. In general, where figures such as 2, 4 or 6 are used, these refer to the number of cylinders in the motor for which these particular magnetos are intended. For example: D4 invariably is a magneto with three permanent magnets, designed for a four-cylinder motor and may be used on any powered motor of this type; whereas, DR4 is for four-cylinder motors not exceeding 35 horsepower. Then, again, DU4 is entirely different construction from the DR4 and is intended for motors not exceeding 30 horsepower. The MR type is a low-tension variety; and the K-23 and K-24 magnetos are for use in conjunction with magnetic plugs.

2—It is decidedly risky to try attempting any such scheme as you have devised when your car skids on a hill so that the radiator faces the top. The best thing to do would be to have the car come to a standstill as quickly as possible without attempting to start. If, however, conditions are such that the car comes to a standstill facing uphill there is nothing wrong in starting up if you are prepared

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

NOTICE

Motor Age has received communications addressed to the Readers' Clearing House from the following named towns and nom de plumes:

So. Braintree, Mass.—New Subscriber.

Vienna, O.—A Subscriber.

Cincinnati, O.—Thankful Subscriber.

Vancouver, B. C.—An Interested Reader.

These communications will be held until the proper signatures have been received. All communications written over a nom de plume must bear the writer's signature, otherwise such communications will not be answered. These signatures are wanted as proof of the authenticity of the inquiries.—Editor Motor Age.

for it. The best policy, however, is to keep the car on the road. Motor Age cannot see much use in going up the hill again because you only will have to come down the slippery portion a short time afterwards.

3—The knock in your cylinder undoubtedly is due to a loose connecting rod. When you put the screw driver on the top of the plug, such as you state, a spark does not take place within the cylinder, and of course there is no explosion to cause a knock in the connecting rod.

BLISTERS ON TIRES

Trenton, Tenn.—Editor Motor Age—Will Motor Age tell us through the Readers' Clearing House what causes knots to come on tires? A few days ago we found one about 1½-inch in diameter resembling a wen. We applied a blow-out patch and in about 2 days we discovered another knot about 7 or 8 inches from the first. Is this the forerunner of a blow-out? Can we split the knot or cut it out and by use of a vulcanizer make the tire good?—Motor Crank.

These knots generally are known as blisters. They are caused originally from cracks in the tire tread. They are filled with sand and air and should be punctured with a penknife and the tire immediately forwarded to some vulcanizing plant where it can be repaired. These blisters are sure indications of blow-outs; in fact, only

recently an example was reported of where a car owner with a big blister on his tire drove to the tire repair shop to investigate and while examining it the blow-out took place. Knots of this nature develop very rapidly, cases having been known where when a car started off in the morning the blister was no larger than a bean, but by noon it was as big as an orange. These blisters are caused by the air and sand working in between the outer layer of fabric and the rubber covering of the tire.

SAYS REO MIXTURE IS WEAK

Chicago—Editor Motor Age—In the January 20 issue of Motor Age appeared a communication from A. E. L. relative to trouble he is experiencing with his single-cylinder Reo, and it was suggested in the answer that the carburetor was the cause of the trouble and he was recommended to give it a general overhauling. It was also suggested to look after the timing. The whole trouble, in my opinion, is that the mixture is too weak.—W. G. Gerts.

FIVE MOTOR QUERIES

Dayton, O.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions: 1—As it is too cold for testers to run the testing cars outside, is there some way to give engine and car a satisfactory test inside? 2—Are there any objections for having a motor firing in the way 1-3-2-4? 3—How much compression space needs a motor with a 4½-inch bore, 6-inch stroke and 70 pounds per square inch absolute pressure—60 pounds gauge pressure? 4—Can Motor Age give the timing—exhaust opens and closes, inlet opens and closes—of a good motor car engine on the market with about the same bore and stroke? 5—I built a truck with a high-speed 50-horsepower engine; when the truck is loaded heavy the speed of the engine is too high to get the power necessary; what can I do to slow the engine down and get still the power there is necessary?—Reader.

1—It is customary at nearly all motor car factories to do the testing out doors on the road, or on a track built for the purpose within the factory grounds, no matter what the weather is. Motor Age knows of one or two cases where the cars are tested inside by mounting the rear wheels on drums, and then starting the engine.

2—It would be impossible to make a motor fire the way you mention unless the cranks were set 180 degrees apart as in a two-cylinder motor, but with the first and second connecting rods on one crank, and the third and fourth on the other, this proved unsatisfactory during the experimental stage of the industry.

3—A compression space 1½-inch high would give 75 pounds compression, and one

2 inches high would give 60 pounds. This does not allow for offset valve chambers.

4—Open intake valve 15 degrees after top dead center; close the intake 25 degrees after bottom dead center; open exhaust 46 degrees before bottom center; and close exhaust 8 degrees after top center.

5—An internal combustion motor to get power must rotate at a certain number of revolutions per minute, the speed being determined by the piston speed. The feasible method to get power enough to your rear wheels would be by increasing the gear ratio.

CAR HAS RIVER WORK

Hawthorne, Nev.—Editor Motor Age—The accompany illustrations show our old reliable 1908 Thomas Flyer in the east fork of the Walker river in Nevada. Every trip is a New York-Paris race with us, as far as experience is concerned. Horses were handy so we had no trouble in getting out, and no difficulty whatever in starting the motor.—G. A. Ashby.

TYPICAL KANSAS CAR

Belle Fourche, S. D.—Editor Motor Age—I note that much is being said in the different motor car journals about left-hand drive, bodies, tires, clearance, etc., on the motor cars as made today. A western man's idea is very different from that of the eastern with well-built roads, good bridges, culverts and grades. In the west, in general, the highways have received the least attention of any of the public improvements. Western people, as well as western towns, counties, and states are too busy improving their nearer comforts in homes and public buildings to give the highways but little if any attention at all. Consequently, the motor car is at a great disadvantage but gaining rapidly in popularity and in a short time this western demand will be strong enough to force the attention of the makers to our needs, and also be a strong factor in bringing about the much-needed improvement in the highways.

Regarding left-hand drive, I would suggest that inasmuch as all wagons and other horse-drawn vehicles have always had right-hand brakes and control, it necessitates learning over to acquire the left-hand style. Now, why not place these levers at the middle of the car directly attached to the transmission case? This would facilitate manufacture, remove the ugly rack from the side of the frame, do away with the extension rods, and on most cars not materially change the brake pulls; at the same time clear the entrance to the driver's seat, be less liable to be bothered by others than the driver, and certainly improve the appearance of the side of the machine, still giving the use of the right hand for shifting, and allow the left front driver's seat as easy of occupancy as any other seat.

The idea of carrying an ugly bundle of tires on the side of a handsomely finished body is most absurd and certainly is not

ornamental, and gives the impression to the uninitiated that the machine is so unreliable as to necessitate the carrying of all repairs and extra parts possible when in use—a needless bad impression. I have entirely abandoned the extra casing, relying solely on an extra inner tube or two and an inside and outside casing patches neatly tucked under the rear seat, and can say that I have never yet had to walk in from tire trouble.

Then, too, the clearance is a great drawback for western roads, in fact for any roads that are not of the boulevard make-up. It should not be less than 12 inches, for as now made any little bump or ridge in the road will hang up most machines as now put on, thus causing damage to the machine and a continual taking to the sides of the road to avoid it. A little attention to this on the part of the maker would do a great deal to remove one of the most serious obstacles to the full enjoyment of motoring. The bodies are entirely too large and heavy, much more so than necessary. Why should an otherwise neat and strong chassis be loaded with a freight-car-size-and-weight body when it is so unnecessary? Who would think of placing a moving-van body on the running gears of their family surrey? Yet this is almost what the makers are now doing in the present motor car construction, when a four or five-passenger body can be made of half the present weight and amply large enough to give comfort. Note the ordinary family carriage as now made with a light, almost skeleton body.

The springs should be elliptic in the rear and the writer cannot understand why it is so necessary to ape the foreign makers when the purchasers of their product have to contend with entirely different road conditions. At best the three-quarter-elliptic is only a nonsensical imitation of the elliptic, more difficult to make, heavier, with much more strain on the chassis frame, and yet with less easy riding qualities than the more simple full-elliptic, and it is sure with its gawky curves, shackles and heavy frame attachments to sooner or later be abandoned for the more simple and in

every way better elliptic. I strongly favor steel stampings wherever possible in place of the cast steel or forgings. The stamped steel years ago proved superior to the castings and forgings in the bicycle. Give us a motor car of medium power, size, good clearance, not overloaded with body and trappings, good-sized wheels, not windbag tires, but tires of 3 to 3½-inch casings on 34 to 36-inch diameter wheels, a four or five-passenger body, weight around the 1,500-pound mark, and the maker will see a steady demand for such, satisfied users, death to the now numerous freaks, and interested votaries to eliminate the useless, foolish, unreasonable and spiteful legislation now indulged in, and a business on a business basis.—I. D. Coryell.

IDE'S HORSEPOWER FORMULA

New York—Editor Motor Age—In Motor Age for January 27 there appeared an editorial entitled "Wanted—Horsepower Formula." In reply to this invitation I submit for criticism, the rating:

D²SN

Horserower—

12

D = cylinder bore.

S = piston stroke.

N = number of cylinders.

12 = a constant.

This formula which I devised in December, 1906, is derived as follows: The horsepower of a double-acting single-cylinder steam engine is measured throughout the civilized

PLAN

world by the expression —

33,000

P is the mean effective pressure in pounds per square inch in the cylinder. A is the area of the piston in square inches—hence, P A is the total mean pressure upon the piston. L is the length of the stroke in feet. N is the number of strokes per minute which in a double-acting steam engine is twice the number of revolutions—hence, L N is the distance in feet traveled by the piston in one minute.

In order to make this formula suitable for a gasoline engine, L must be expressed



MOTORING DIFFICULTIES ENCOUNTERED NEAR HAWTHORNE, NEV.

in inches. A can be put in terms of the πD^2 diameter, namely $\frac{4}{\pi D^2}$ or $D^2 \times .7854$. For

N we substitute R—the number of revolutions—and divide by 2 as we only get a working stroke every other revolution. The result of these operations is the expres-

$P L D^2 R$
sion $\frac{P L D^2 R}{1,008,406}$. Now, in a gasoline engine

1,008,406 the mean effective is usually between 70 and 90 pounds per square inch. Splitting up the divisor of the expression in its latest form, we have—

$$\frac{P L D^2 R}{1,008,406} = \frac{P L D^2 R}{84 \times 12 \times 1,000}$$

approximately. That is to say, that if we assume a constant value for P, of 85 pounds per square inch, and 1,000 revolu-

$L D^2$
tions per minute for R, $\frac{12}{12}$ gives the

horsepower of one cylinder at 1,000 revolutions per minute. Naturally, if there are more cylinders, we multiply by their num-

$D^2 S N$
ber. The rating $\frac{12}{12}$ has the great

merit of extreme simplicity. As 12 is divisible by 6 and 4, the formula for six

$D S$
cylinders is merely $\frac{2}{2}$, for four cylinders

$D^2 S$
etc.—John Jay Ide.

3

PLUG ON PINE BOARD

Syracuse, Neb.—Editor Motor Age—In the Readers' Clearing House columns, Motor Age issues December 16 and 30, I notice questions and answers on how the high-tension secondary current completes its circuit from the motor to the coil. Such being the case will Motor Age inform me on the following: I took a regular Kingston vibrator coil and connected it in circuit with a storage battery; then I connected an insulated wire with a spark plug attached to the secondary terminal of the coil and placed all on a dry pine plank with the plug 4 to 6 feet from any other object except the plank. By shortening the primary circuit a good buzz occurred at the vibrator but no spark at the plug. Next I placed a heavy steel wrench in contact with the plug and a good hot spark occurred at the plug and the more metal I placed in contact with the plug the hotter the spark. All this was accomplished while the coil, battery and plug were thoroughly insulated from any other contact and none of the wires was in contact with each other.—A Subscriber.

Unless the coil you used for your experiment was useless you did a foolish thing, one which is sufficient to break down the best coil made unless there is a safety gap inside the coil for the induced

high-tension current to jump across. Whenever the primary circuit is closed the secondary is induced and must return to the place it came from. While your plug was on the dry board there was no way for it to get back so it jumped inside the coil. When the metal was placed near the plug it provided a circuit and the longer the metal the less resistance; hence, the better spark.

THE DOUBLE-PISTON MOTOR

Dundas, Wis.—Editor Motor Age—Noting in Motor Age, issue December 16, 1909, page 18, a cut of a gasoline engine that explodes in the center and has two piston heads, and working each way, will Motor Age inform me if this engine is developing more power than a single-piston engine of the same cylinder bore and stroke. —Dundas Canning Co.

The double-piston motor to which you refer is computed to give more power per cylinder diameter than a single-piston type, although Motor Age never has seen any definite report of horsepower tests of such types of motors.

TO SECURE RUBBER BUMPERS

Grand Rapids, Mich.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me where I can secure rubber bumpers for rear axle springs. I desire the kind that strap on, as shown in Fig. 1, so that they can be readily put on or taken off. I have a motor car which I intend to use for business purposes and will have occasion to carry heavy loads, which will bring the springs together, and I want bumpers to avoid that.—John Seven.

These can be secured from the majority of the large makers of pneumatic tires, nearly all of whom have rubber departments in connection with them. Many other specialty rubber and supply houses handle them.

CRITICIZES LEFT-HAND DRIVE

Gary, Ind.—Editor Motor Age—Kindly advise me through the Readers' Clearing House regarding the left-hand drive. On Saturday at the show I noticed that with possibly one exception only the low-priced runabout gasoline cars were left-hand drive. If seating the driver on that side is such a good thing why don't the makers in general adopt it? I also would like to know if the prospects are that next year cars around \$1,500 will use the left-hand drive. I am very much in doubt as to what to do. I don't want to get a car this year that will be a curiosity next year, or the exception to the usual car seen.—Subscriber.

Motor Age hardly agrees with you that only low-priced runabouts have left-hand control, because had you noted carefully you would have seen the model 29 Peer-

less which sells at \$4,500 fitted with left-hand control. The new Owen car which sells over the \$4,000 mark also is provided with left-hand control. For city work the left-hand control has a great many merits and an equal number for country driving, although from certain sections of the country there come complaints that they want right-hand control due to trouble of getting past slower-moving vehicles traveling in the same direction. The left-hand control is logical for America and you will find it increasing in use right along. The highest-priced makes of taxicabs are using it today. You will realize the value of left-hand control if you have driven cars in the city and are following a street car which you have to pass at the left side. You readily can see if the course is clear, whereas with right-hand control this is very difficult.

WANTS SIGNAL SIGNBOARD

Elmhurst, Ill.—Editor Motor Age—I have a suggestion to make pertaining to signboarding roads, and to make the plan clear will illustrate: In touring west from Chicago to Elgin, the route can be designated by a color scheme, such as a band of red and blue painted on objects by the roadside, such as poles, fences, stores, buildings, etc. Going west from Elgin to Rockford the color scheme could be red and green. There should be one basic color for each direction from Chicago—east, green; west, red; north, black; south, yellow. Intermediate routes could be designated by the addition of other colors to the principal one.—Dr. Henry F. Langhorst.

CAR THE POPE-HARTFORD

Cleveland, O.—Editor Motor Age—Will Motor Age kindly state through the Readers' Clearing House which car made the following time in the races in California last fall: 150 miles in 2:15:23, and 258 miles in 3:59:18?—F. A. Schmidt.

You are somewhat vague in your question as to whether the contests to which you refer were road or track events, but Motor Age has discovered that the time you mention was made in the Portola road races at San Francisco October 23, 1909. The Pope-Hartford, driven by Jack Fleming, made 264.16 miles in 3:59:18. The time is the same as you mention, but the distance is 4 miles shorter. Fleming also won the small-car class in this race, which was of a distance 148.26 miles, in 2:15:23.

MATERIALS FOR GEARSETS

South Brownsville, Pa.—Editor Motor Age—Will Motor Age kindly advise through the Readers' Clearing House what alloy steel is considered best for gearset use, and where same may be obtained in small quantities?—J. R. Herbertson.

Different types of alloy steel are used in gearsets. At present chrome nickel has the biggest following, although nickel steel and vanadium steel have many followers. All of these steels can be obtained from American houses which handle them.





Legal Lights and Side Lights



MANY NEW YORK BILLS

DURING the opening session of the New York state legislature at Albany no fewer than seven bills relating to motor legislation were introduced. Those creating the most interest were introduced by Assemblymen Bates and Callan and both repeal entirely article 11 of chapter 30 of the laws of 1909, entitled, "An act relating to highways, constituting chapter 25 of the consolidated laws."

In many respects these two bills are alike. Both levy an annual registration fee on motor cars, Mr. Callan's bill including motor cycles at \$2 per year; both call for the payment of fees and fines collected into the state treasury from which they shall be applied to state highway maintenance, etc.; both provide for the operation of cars within the state by non-residents without payment of the registration fees for a period of 10 days, provided they have complied with the registration laws of their home state and that such state has a reciprocal statute.

In the bill fostered by Mr. Callan there is a section concerning garage records which will interest the owners of garages. It reads as follows:

"Every manufacturer and dealer in motor vehicles, and every owner, proprietor, person in control, or keeper of a garage, shall keep or cause to be kept in a book a proper record of every motor car which enters and which leaves his garage, stable, shop or place of business. Said book shall have columns and headings substantially as follows: Date, register number and letter if any, time of entering garage, time of leaving garage, operator's or chauffeur's name.

"Every person operating or running a motor vehicle into or out of a garage or into or out of a stable, shop or place of business of a manufacturer or dealer shall enter or cause to be entered in said book in the columns under the proper heading the date and time of entering and leaving, the register number and letter, if any, of the motor vehicle and the full name of the operator or chauffeur. In the case of motor vehicles operated or run into or out of the garage by others than chauffeurs, the records shall be kept by the owner, proprietor or person in control of the garage or by some employee, or employees, especially designated for this duty, and the said owner, proprietor or persons in control of such garage shall be responsible for the proper keeping of said record. All entries in said book shall be made legibly in ink or with indelible pencil. The said book shall be kept in some

convenient place and shall be open at all times to the inspection of the commission and its agents and of any police officer or constable."

The scale of fees levied by Mr. Callan's bill is as follows: For every motor cycle, \$2; for every commercial motor vehicle, \$5; for every motor car of less than 20 horsepower, \$5; for 20 horsepower but less than 30, \$10; for 30 horsepower and up to 40, \$15; for 40 horsepower and up to 50, \$20; for 50 horsepower and over, \$25.

In Mr. Bates' bill the scale of fees is as follows: For every motor vehicle of less than 20 horsepower, \$5; for 20 horsepower and up to 30, \$15; for any motor vehicle having a rating of 30 horsepower or more, \$30; for motor vehicles used solely for commercial purposes the fee shall be \$10.

Concerning speed limits, Mr. Callan's bill says: "Every person operating a motor vehicle on any way in this state shall run it at a rate of speed at no time greater than is reasonable and proper, having regard to traffic and the use of the way for the safety of the public. It shall be prima facie evidence of a rate of speed greater than is reasonable and proper as aforesaid, if a motor vehicle is operated on any way outside of the thickly settled or business part of a city or town at a rate of speed exceeding 20 miles per hour for the distance of $\frac{1}{4}$ -mile. It shall be prima facie evidence of a rate of speed greater than is reasonable and proper as aforesaid if a motor vehicle is operated on any way inside the thickly settled or business part of a city or town at a rate of speed exceeding 15 miles per hour for the distance of $\frac{1}{4}$ -mile, or if a motor vehicle is operated on any way upon approaching an intersecting way, or in traversing a crossing or intersection of way, or in going around a corner or curve in a street or way where the operator's or chauffeur's view of the road traffic is obstructed, at a rate of speed exceeding 8 miles per hour."

Assemblyman Bates' bill regulates the speed according to the foregoing with the exception that on country roads he could constitute a speed of over 30 miles an hour for $\frac{1}{2}$ -mile as prima facie evidence that the car is being run at a speed in excess of the law. In addition he places a limit on the speed of motor vehicles about to pass a standing street car, or one about to stand, on the same side at which passengers alight, of 5 miles an hour.

In this bill all rights of local corporations to make their own speed regulations are withdrawn, while in Assemblyman Callan's bill they retain the same right providing such proposed regulations are advertised in the local papers previous to

their becoming effective as a law measure.

Assemblyman Haines has a bill amending the highway law whereby non-resident owners of motor cars may use the state highways without paying the regular registration fees providing the states or territories from which such owners come have equivalent laws according equal privileges to car owners of this state.

WAS NOT CAREFUL

In a New York case, Vilicki vs. New York Transfer Co., 119 New York Supplement, 220, the facts show that the plaintiff and a friend were seated about the middle of an open street car and were riding up Broadway in New York city. The plaintiff, before he got off the car, saw the motor car driven by defendant's servant about 20 feet away. Plaintiff nevertheless alighted and was struck by the motor car about as soon as he had reached the street. The machine came to a stop and the wheels did not pass over the plaintiff. A verdict and judgment were given for the plaintiff, but on appeal the case was reversed. The court in part says:

"The plaintiff claims that he saw the motor car when it was 20 feet, or perhaps more, away from him, and yet it struck him immediately after he alighted. Either his testimony that he saw it is untrue, or he placed himself in a position of danger, expecting the driver to avoid a collision. Even if he has shown any negligence on the part of the defendant's driver, he has certainly completely failed to show an absence of contributory negligence on his own part.

"Moreover the damages were clearly excessive. There is no medical testimony of any kind; and even the plaintiff gave no testimony as to the nature of his injuries. It only appears that he went to the hospital, and that both his knees were bandaged; that he took the car home and was in bed for a week, while a doctor attended him daily, and thereafter he was confined to his house for another week; that he suffered pain in his knee; and that during the two weeks while he was unable to work he should have earned \$38. The trial justice allowed him \$250 damages, apparently compensating him in the sum of \$214 for pain and suffering. Judgment reversed."

OF INTEREST TO MAKERS

A contract to replace such parts "as may break in service" does not bind a motor car maker to replace such parts as are worn or defective, according to Barry vs. American Locomotive Automobile Co., 119 New York Supplement, 237.



Motor Car Development



FIG. 1—PEERLESS LEFT-HAND CONTROL

THE Peerless company is listing two models in town cars, namely, limousine and landaulet, both fitted on a model 29 chassis, which is a new one for this concern. These bodies are both special designs intended for city and suburban use, and the distinctive feature is left-hand control, the driver sitting on the left-hand side and controlling the change-speed and emergency levers with his right hand instead of with his left, as is customary in several examples of left-hand control now on the market. Although the change-speed and emergency brake levers have been shifted to the center of the car and the clutch and regular brake pedals moved to the left side, there is no difference whatever in the control of these cars than those of the regular Peerless line. In addition to the left-hand control these two town models possess one other distinguishing feature—namely, a double drop in the frame side members, which has been introduced in order to obviate a second step, so that the bottom of the door is very low, due to the frame being dropped immediately in front of it and then raised in the usual way in front of the axle.

The power plant in this model 29, in fact the complete chassis, is quite different from any previous Peerless design. A few examples will show wherein this exists: The motor uses L type cylinders cast in pairs, with valves on the left side instead of having cylinders with opposite valves; dual ignition in place of double is employed; the gearset has been redesigned with the countershaft beneath the main-

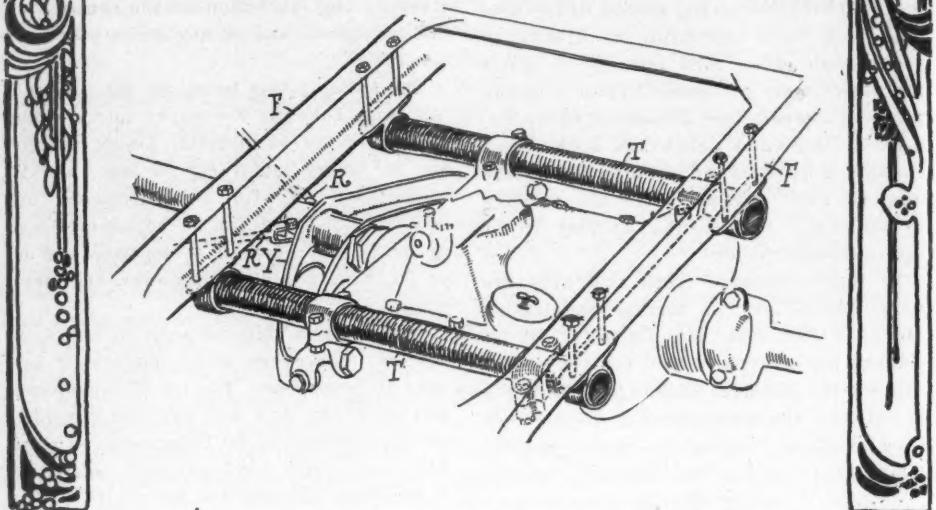


FIG. 2—THE GEARSET IS CARRIED ON TUBULAR MEMBERS

shaft, and the box now is supported on two longitudinal tubular members; instead of two universal joints in the propellorshaft there is but one joint, and the shaft is inclosed in a torsion tube; the rear axle resembles that in the large car in that the axle carries universal joints which permits of disbing the rear wheels; and a novelty in the motor is that it is supported on two cradle cross members of the main frame, a construction which eliminates the subframe in the chassis makeup.

A hasty analysis of the motor shows it to be a particularly interesting one, employing twin castings. The valve chambers on the left side are particularly deep, Fig. 5, and the exhaust manifold is incorporated in them so that the only semblances

of an exhaust manifold are the short connector C between the valve chambers in the front and rear cylinder casting and the manifold M which exits from the rear casting the same as in an en bloc type of motor. This manifold design gives a very simplified appearance for a motor of the L type. The intake manifold is, roughly speaking, a V, the arms of which enter the base of the valve chambers. The new Peerless carbureter is fitted, and as shown the throttle and auxiliary air valve are accessible and the float chamber located considerably beneath the frame level so as to insure a gravity flow of gasoline from the tank beneath the front seat. The steering gear is compactly placed in rear of the carbureter, so that the shortest steering con-

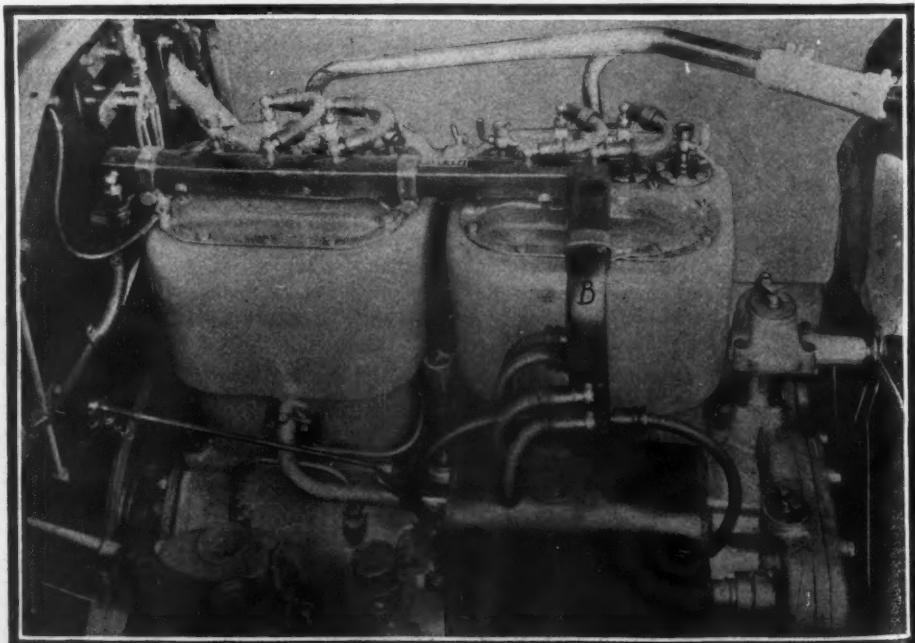


FIG. 3—MAGNETO SIDE ON PEERLESS TOWN CAR CHASSIS

Peerless Town Car

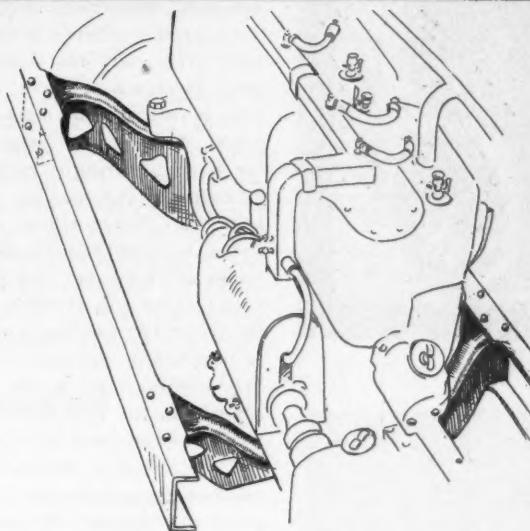


FIG. 4—THE MOTOR IS CARRIED DIRECT ON FRAME PIECES

nections possible are fitted, with the hand control on the steering wheel as well as the accelerator type. A control on the gasoline needle valve is provided on the dash and is a short horizontal lever working in a serrated semi-circular rack. The ball-and-socket type of joint used on the steering connections in the regular Peerless models is employed on this new one.

The adoption of a Bosch dual ignition system simplifies to considerable extent the motor, in that the timer is eliminated and also one set of spark plugs. As shown in Fig. 3 the high-tension magneto is on the right side, where it is inclosed in a leather case. The high-tension wires connect with the special bar B in which all of them are carried over the cylinder

heads, this system of wiring having been used by the company for several seasons.

The lubrication is Peerless throughout, although modified in that the oil reservoir is now an integral portion at the left front. This reservoir is fitted with hand pumps whereby oil may be supplied to either the front or rear crankcase compartments. The oil to the motor parts flows through sight feeds on the dash. A lever at the side of the motor provides for opening the petcocks beneath the crankcase in order to drain off the oil.

The cooling system is the same as that on regular Peerless models, excepting for the rearrangement of parts. The water pump, of the herring-bone-gear type, is located beneath the rear of the magneto on

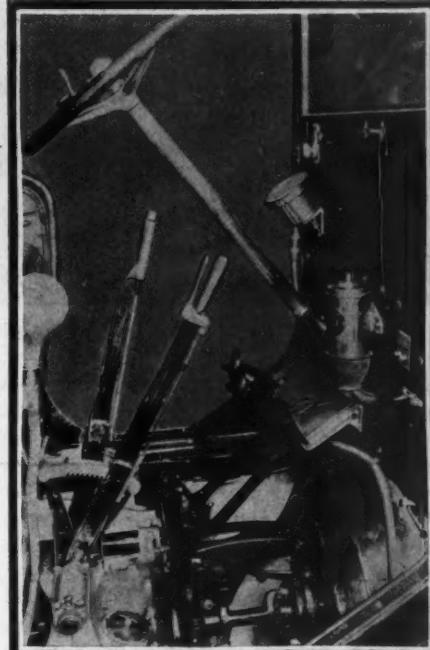


FIG. 6—PEERLESS CONTROL PARTS

the right side and is driven by shaft. The fan is driven by spiral gears.

In the transmission system of the car as many changes appear as in the motor. This does apply, however, to the internal expanding clutch, which is of the same design as used on previous models. Passing to the selective gearset, one of the real changes in design appear. The gearset is brought well to the front beneath the footboards, where it occupies a very accessible position. An illustration, Fig. 2, shows its suspension on tubular pieces T which are attached to the under side of the crossmembers F of the frame. This allows of dropping the gearbox without moving the body of the car. As already stated, the design is different in that the countershaft is beneath the main-shaft, a design which allows of bringing the tubular members T closer together. Mounting the change-speed lever as well as the emergency brake lever directly above the case simplifies the control connections to a remarkable extent. In the cover of the gearset is a hand plate which may be quickly removed to examine the gears, and it provides an easy way for filling with oil or grease. The set gives four forward speeds. In Fig. 8 appears a gearshaft lever locking device to prevent the car being stolen when left alone. It is a simple padlock scheme.

Passing rearward from the gearbox another innovation in Peerless design appears, namely, that of the torsion tube inclosing the propellorshaft so that there is but one joint in the latter. This propellor-

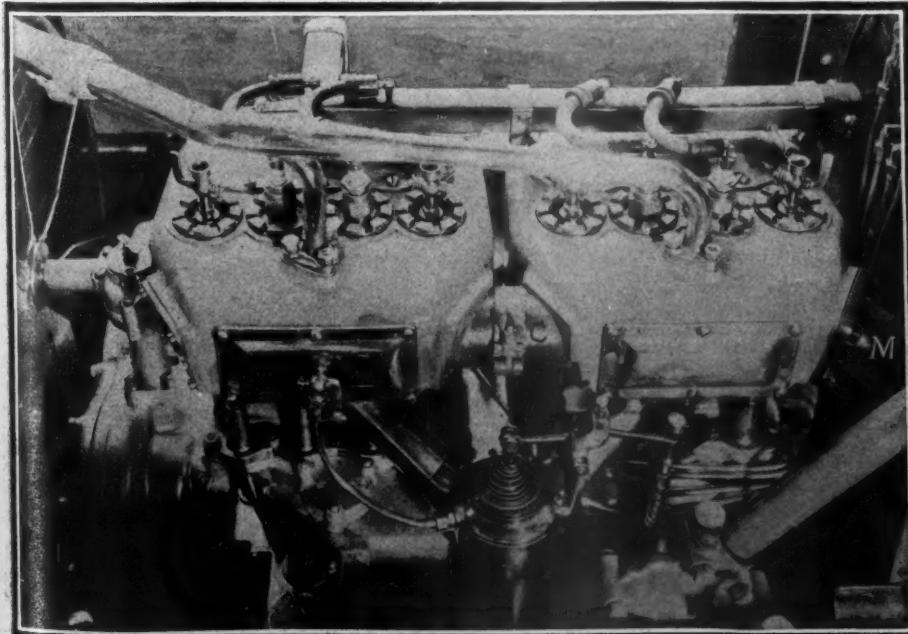


FIG. 5—PEERLESS TOWN CAR MOTOR WITH L-TYPE OF CYLINDERS

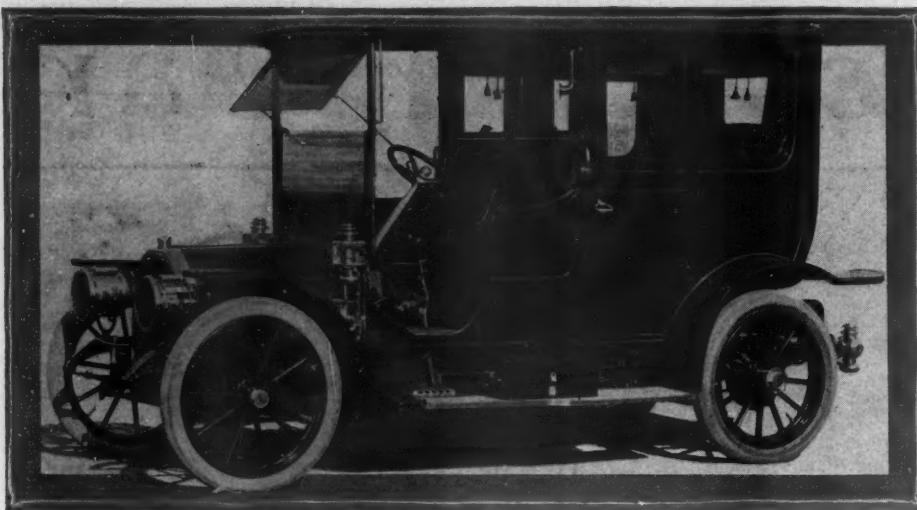


FIG. 7—THREE-QUARTER FRONT VIEW OF PEEPLESS TOWN CAR

shaft housing terminates at its front end in a yoke forging Y which hinges to brackets on the tubular members supporting the gearbox, this construction being conventional with many users of the torsion tube. Within the arms of the yoke is located the one universal joint of the system. The torsion tube is braced by distance rods R which connect with the rear axle housing at its end and gradually converge at the front end of the torsion tube. These brace rods correspond to the regular distance rods of Peerless models. It is claimed that with the car loaded the propellor-shaft is inclined to the horizontal at an angle of 1 degree. The principles of rear axle construction are similar to those used in the large car excepting the axle as a whole lies in a horizontal plane. The rear wheels are dished to an angle of 2 degrees. Each axle driveshaft ends in a modified gear which engages with a correspondingly modified internal gear on the rear hub, thus giving the necessary universal joint action, needed because of dishing the wheels. In the previous Peerless models this universal joint arrangement is located at each side of the differential. The brake system is essentially the same as on the larger cars, excepting in that the equalizers are carried entirely inside of the frame where they are completely hidden from view.

The running gear construction is a well-designed unit. The front axle is an I-beam imported forging; the frame is cold-rolled steel with double drop side members and without sub-frame parts; the motor is supported on two heavily dropped cross members, thus doing away with supporting arms on the crankcase; all springs are silico manganese steel made by Lemoine of France, the design being semi-elliptics in front and platform in rear, and 34 by 4 and 4½-inch tires are furnished. The car is wired with oil-electric dash and tail lamps, Prest-O-Lite tanks for headlights and the usual equipment of extra folding seats in the inclosed compartment, so that extra passengers may be carried when the emergency arises.

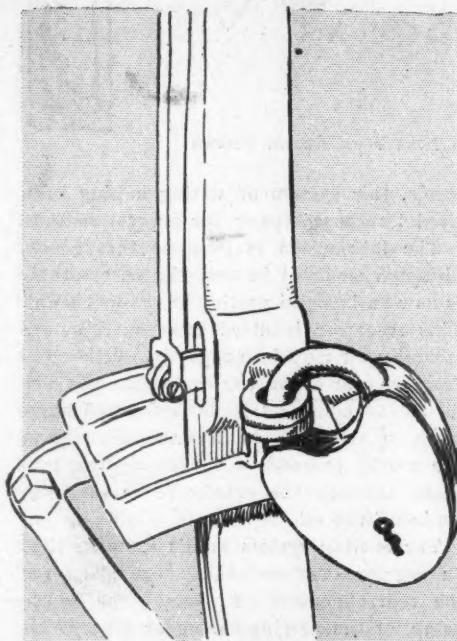


FIG. 8—GEARSET LOCK

The Pierce-Arrow

THE Pierce-Arrow company has, since the exhibition of its seven-passenger touring landau at the Madison Square garden show, announced in the future this will be a regular Pierce model and furnished with practically the same complete equipment as shown in New York. This landau type is furnished on a six-cylinder 66-horsepower chassis. The original car was built for special touring purposes in Europe. So extensively has touring developed of late that the Pierce-Arrow company realizes there is a permanent field for such vehicles of this type. As shown in the side view of the car, it offers every protection for inclement weather, and for fine weather it practically becomes a touring car, the only obstructions in the view of the passengers in the rear seats being the framework for the front and door windows.

This being a special touring landau, more carrying space for supplies, tools and parts is afforded. These have been built up into boxes that extend the entire length of the running board from front to rear fender, where space for tools, accessories, supplies of various kinds, inner tubes and parts are provided. As the top of this box is higher than the ordinary running board an extra folding step has been placed for entrance to the inclosed compartment. When the door is closed this step S fits snugly against the running board, but as soon as the door is opened it swings downward into position. Due to the supplies being carried in the running board box B1 the space beneath the rear seat is devoted exclusively to baggage, and a sliding drawer has been placed under the seat to provide a luncheon kit.

A novelty in this car, and one illustrated in Fig. 12, is the folding washing arrangements of the same design as that used on yachts. It is built into the back

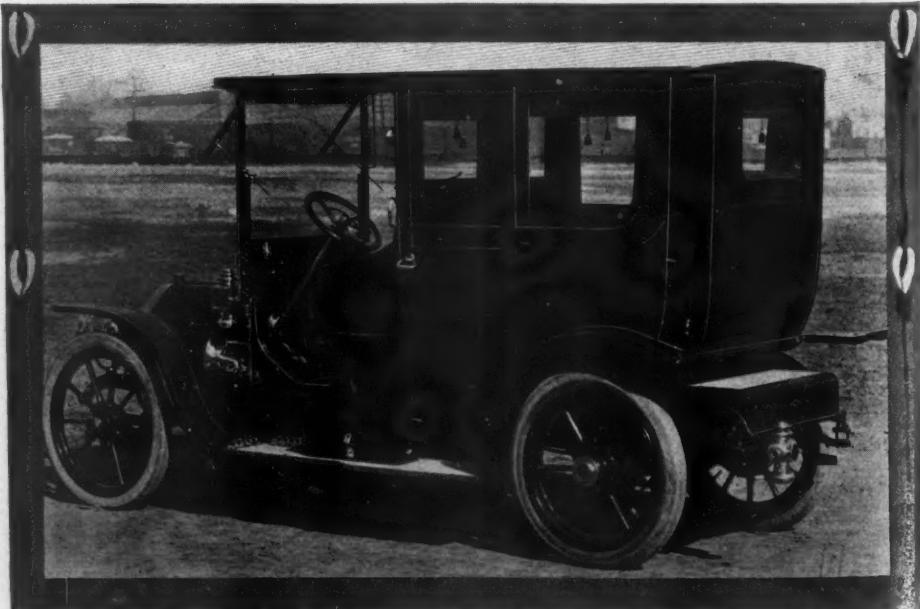


FIG. 9—THREE-QUARTER REAR VIEW OF PEEPLESS TOWN CAR

Touring Landau

of the front seat and water is supplied by pressure from a tank carried under the body. This washing compartment has accommodations for towels, combs, brushes, etc., and to either side of it are racks R for robes and coats.

The carrying of baggage is always a serious matter and it is natural that in a body design, intended specially for touring, this matter should be well coped with. Provision has been made for carrying two trunks in waterproof cases on the roof, and space for three more is provided on a rack back of the body. The chauffeur's trunk is carried in the box B which in the regular Pierce model contains supplies and a gas tank.

JACOB ACCUMULATOR

M. Jacob, a chemist in Annonay, France, has built a lead accumulator, using lead oxide. The two electrodes, positive and negative, are alike as far as their outer side or case is concerned. They differ only as far as material placed inside of the case is concerned. The electrode consists of a rectangular loading tube made of antimoniated lead, the bottom and sides of which are full and which serve as a support to a screen or wiring, which is made or set up on both sides. The thickness of this screen or wiring is not more than $1\frac{1}{2}$ millimeters, and the height of the loading tube is exactly 5 millimeters. In the tube, which forms the positive electrode, one loads or places certain grains, which are obtained by the decomposition of the aluminum in the electrolyte, which is made of plumbate of lead with excess of base. The chemical substance thus produced gives after calcination or oxydation a sort of silico-aluminate of lead, extremely light and porous, which is granulated and which is



FIG. 10—PIERCE-ARROW TOURING LANDAU, A NEW MODEL



FIG. 11—THE HINGED STEP



FIG. 12—TOILET FACILITIES IN PIERCE-ARROW TOURING LANDAU

then put in. This active material or substance has the advantage of letting in a greater quantity of electrolyte and as a result there is much better utilization of the peroxide of lead used.

The negative electrode consists of a loading tube similar to the positive, but it is filled or fitted out with light oxide of lead obtained by a special process, the density of which averages 2.90. This oxide when charged gives a very spongy lead, which greatly facilitates reaction. The electrodes are interchangeable, as the positive electrode, which contains the active substance, may be easily changed or transformed into a negative electrode. It is only necessary to take out the grains, which may be taken out with a special extractor, and to replace them with oxide of light lead. The loading tube weighs 360 grams. In the positive electrode there are 370 grams of active substance and 320 grams of substances are in the negative electrodes. A complete element consisting of nine plates weighs 9.485 kilos—20.89 pounds—made up as follows:

	Pounds
Nine plates at 360 grams.....	7.12
Material of the five positive electrodes.	3.52
Material of the four negative electrodes.	3.256
Electrolyte—density :1.26	5.104
Base	1.470
Connections385

From the White company is a booklet containing extracts from many foreign journals on its gasoline car.

The 1910 catalog of the Warner Gear Co., Muncie, Ind., features its various steering gears, transmissions, clutches, differentials, control levers, etc. Besides the half-tone illustrations the value of the book is enhanced by the many line drawings of its motor car parts.

Recent literature from the R. L. Morgan Co. is a red and yellow, large-sized postal card featuring its trucks.

“A Runabout You Will Be Proud to Drive” is the title of a folder from the Demotcar Sales Co., describing and illustrating the Demot car.

Facts About Malleable Cast Iron

AS IS well known, malleable cast iron is the result of a physical and chemical transformation of white cast iron produced by heating the latter in the presence of an oxidizing compound. The physical transformation plays an important part in the process. Metallographic researches carried out on cast iron, both previous to and after the treatment, reveal in the malleable iron the presence of graphitic carbon, but not in the form of irregular stratifications, which would tend to discontinuity in the metal, but in the shape of infinitesimal globules distributed among the mass of pearlite and ferrite close to the surface. The physical transformation is indeed of very great importance, and in view of this, some scientists take it for granted, though very wrongly so, that the chemical refining action which takes place on heating cast iron in the presence of an oxidizing substance may be entirely left out of consideration. Proof that the chemical action is great is afforded by the more marked effect of the treatment on small castings.

A small wearing part of a machine, manufactured by a German firm which has made a specialty of this class of material, showed upon analysis the following typical average composition:

	Per Cent
Sulphur	.102
Phosphorus	.081
Manganese	.54
Silicon	.31
Carbon, total	.29

The chemical composition of the cast iron used has to meet certain special conditions, with a view to facilitate to the greatest possible extent the chemical action, which has for its object the elimination from the outside layers of the piece of all the elements which hinder malleability.

Manufacturers of malleable iron are often the owners of small ordinary foundries; they believe they can as readily make malleable-iron pieces as ordinary castings, and they generally proceed without having any data as regards the quality of metal necessary to start with, neither do they give much consideration to the choice of an oxidizing mixture with which to produce the refining action. They naturally obtain bad results.

The author has had the opportunity of dealing with this class of manufacture in a number of Italian works, and has been able to collect information, to carry out many analyses, and to experiment with a great variety of oxidizing compounds. He found that the composition of the cast iron to be used is of very great importance; it must be suitable for the production of small castings, and at the same time suitable for transformation into malleable iron. The correct selection of the oxidizing compounds is also of very great importance. In his experience the cast iron which best

EDITOR'S NOTE—This is a translation in abstract of a paper prepared by Professor Rodolfo Namais, of Milan, Italy, read before the International Congress of Applied Chemistry and published recently in *Engineering*.

lent itself to the manufacture of malleable iron was a white cast iron comparatively low in silicon and manganese. Percentages of sulphur and phosphorus, which could not be allowed in iron or mild steel, are not greatly prejudicial to the quality of malleable iron. In analyses he had carried out he had found these two compounds existing in comparatively high proportions. A quality of cast iron recommended by a firm in Milan as suitable for the manufacture of malleable iron was found to contain:

	Per Cent
Carbon, total	.23
Silicon	.215
Manganese	.62
Sulphur	.140
Phosphorus	.085

This iron, melted down with suitable additions, gave, if the pieces were fairly rapidly cooled, castings suitable for the malleable process; the results, however, were not so good and not so regular as when using a cast iron containing much less silicon. The following was the analysis of a cast iron which the author had repeatedly recommended for adoption:

	Per Cent
Carbon, total	.31
Silicon	.37
Manganese	.68
Sulphur	.081
Phosphorus	.194

A certain proportion of silicon, up to 5 per cent, was useful in any case, as it facilitated the transformation of the carbon from the combined state to the graphitic state in the globular form above referred to. An excess of silicon, however, rendered the product less malleable; silicon could be eliminated to a greater extent than might be expected from the metal close to the surface, but it was impossible to eliminate it from the parts deeper down.

For an oxidizing agent, the author first used iron ore in which the active substance was Fe_2O_3 mixed with silica sand; this compound was still employed in many works. The addition of an inert substance to the iron oxide is indispensable, because otherwise the oxidizing action would be too energetic and too rapid, giving rise to chemical transformation in advance of the physical, the outside surface becoming not only refined, but more or less corroded. On the other hand, silica sand had the disadvantageous property of partly scorifying the iron oxide, thus forming a slightly porous mass, which adhered to and frequently produced an extensive corrosion of the surface.

It appeared to the author that the substitution of lime for sand in the oxidizing mixture would give satisfactory results, either because it would counteract the

tendency which the mass had to agglomerate, and to adhere to the iron, or because the lime might act better than sand, as a purifying substance on certain elements of the metallic outer surface, especially the silicon and sulphur. The following were the results of experiments carried out under similar conditions. The author used oolitic ironstone of the best quality, containing 90 per cent of Fe_2O_3 , and both the quartz and lime additions were 50 per cent of the mixture. He had taken a cast iron containing a high proportion of silicon, in order to obtain complete information in regard to the action of the mixture with reference to that substance:

	Sulphur	Phosphorus	Manganese	Silicon	Carbon
	p.c.	p.c.	p.c.	p.c.	p.c.
Cast iron	.053	.059	.34	1.80	3.12
Malleable iron, using oxidizing compound containing silica, quartz	.038	.052	.35	.39	.86
Malleable iron, using oxidizing compound containing lime	.028	.050	.30	.30	.49
Malleable iron, using oxidizing compound containing lime, after a longer heat treatment	.033	.040	.20	.03	.07

As will be seen, therefore, under identical conditions, the fining power of the compound was slightly higher when lime was used instead of silica. By carrying the heat treatment further—and this could be done with an oxidizing mixture containing lime, and not with one containing silica, owing to excessive corrosion—it was possible to eliminate almost completely the silicon and the carbon from the surface of the metal.

Under the conditions in which the third experiment was carried out, the surface of the piece became damaged, although the damage was less than that which would occur when using silica. The three experiments showed, however, that it was possible to reduce largely the proportions of carbon and silicon. With a basic mixture such as the one used, the elimination of sulphur and phosphorus was very small—practically nil. An Italian firm, after long following empirical methods in the manufacture of malleable iron, now used a compound which consisted of small iron refuse and forge-scale. In this manner it had largely improved the quality of its products. The oxidizing compound had the following analysis:

	Per Cent
Iron	40.6
Ferric oxide	50
Alumina	5
Manganese	3.2
Carbon	0.3
Silica	Trace
Lime	Trace
Magnesia	Trace

As it was a matter of some difficulty to state the amount of Fe_2O_3 and Fe_3O_4 which occurred in a compound of iron and iron oxide, the author had been compelled to give the analysis as above. It should be noted that the proportion of metallic iron was low, the principal ingredient being the

oxide from the scale. However, by a somewhat prolonged exposure of the compound to the action of the atmosphere—a condition which the works in question deem useful—a comparatively high proportion of Fe_2O_3 might be produced in the compound. The use of small particles of iron had two objects: first, the retardation within certain limits of the oxidizing action of the compound, with a view to secure the slow and gradual oxidizing of the piece, an essential condition; and, in the second place, its purpose was to maintain the piece in a certain degree of porosity, and to prevent, in any case, the attack of its surface. Repeated experiments had afforded proof that from the point of view of the preservation of the outside surface of the casting, the compound above referred to was superior to any other.

The following analysis of malleable iron castings was obtained with the said compound, starting from a silicious cast iron similar to that used in the other experiments above mentioned:

Sulphur Per Cent	Phosphorus Per Cent	Manganese Per Cent	Silicon Per Cent	Carbon Per Cent
.155	.058	.59	.47	.80
.133	.101	.63	1.22	.36

In the case of a comparatively small casting, in which the oxidizing action was believed to have extended through the whole mass, the composition of the malleable iron was as follows:

Sulphur Per Cent	Phosphorus Per Cent	Manganese Per Cent	Silicon Per Cent	Carbon Per Cent
.133	.100	.62	.062	.28

while the analysis of a fragment taken at a depth of 1 to 2 centimeters from the surface revealed the following composition:

Sulphur Per Cent	Phosphorus Per Cent	Manganese Per Cent	Silicon Per Cent	Combined Carbon Per Cent	Graphitic Carbon Per Cent
.148	.103	.61	1.59	.35	1.36

A comparison of the above analyses showed that whatever the oxidizing compound might be, its action was limited to oxidizing the carbon and silicon; in regard to the last compound referred to, it would appear to result in a less regular action in connection with the silicon than an ordinary basic oxidizing compound did. The elimination of carbon and silicon decreased rapidly with the thickness.

The author was carrying out a series of experiments based upon the use of an oxidizing agent, which consisted mainly of ferric oxide and carbonic acid gas, together with a basic substance. It appeared to him that, theoretically, the oxidizing properties of carbonic acid anhydride should, at the temperature of the furnace, facilitate the elimination of the

St. Louis Exhibition Classy Show

(Continued from Page 7.)

The accessory dealers have an advantage over the car dealers at the show. Each accessory exhibitor has a company room to himself. These rooms are cozy and many of the decorations are unique. However, not so many persons visit these displays, as they are at the sides of the building, a wide door opening from each upon the main show. But those who do visit the accessories find plenty of room and have an opportunity better to examine the various appliances of the motor car.

Among the car exhibits are many never before seen in St. Louis. Some of these belong to agencies just located here. Among these cars are the Black Crow and the Cole. Another new feature is the truck. Trucks never until this year were exhibited at a show in St. Louis.

Simultaneous with the show has arisen a cry for better country roads. Dealers here admit that this is the greatest drawback. There is too little opportunity for safe motoring. The plan recently launched by the Manufacturers' Association of this city to tap the southwest with a main road to the gulf and branches extending across the various states such a road would pass through has been revived. It is quite probable that a new organization of motor car men formed solely for the purpose of promoting a good roads movement will be organized immediately after the show closes. At least, such a plan is being talked strenuously. The good roads plan is heartily approved by visitors. They vouch for the financial support of their territory, and that has been the only thing to hold back the local enthusiasts. The exhibitors:

MAIN FLOOR

Acme Auto Co., Kisselkar
Bagnell Auto Co., Cadillac
C. F. & J. R. Brown, Peerless, Detroit
electric
Buick Motor Co., Buick, Welch
Colonial Auto Co., Studebaker
Dorris Motor Co., Dorris

carbon from the cast iron. The formula



would easily explain the reaction. In contact with the iron oxide CO was transformed afresh in CO_2 . A small quantity of CO_2 was always formed by the action of the oxide of iron on the carbon of the casting. His aim was to greatly increase the quantity of carbonic acid anhydride, adding to the oxidizing compound a quantity of graphite or anthracite in small pieces. By this means there was produced a gradual and continuous evolution of CO_2 , forming an atmosphere rich in this gas around the casting. Such a gaseous oxidizing medium should be much more effective than in the form of powder, and should reach deeper down below the surface than the latter. The compound with which he had obtained the best results was as follows:

Ford Motor Co., Ford
Gardner Motor Co., Lexington
Halsey Auto Co., Packard, Stevens-Duryea
Kardell Bros., Reo and Fal-car
Lindsay Motor Car Co., Inter-State
Maxwell-Briscoe Co., Maxwell
Missouri Motor Car Co., American Simplex,
Marmon

Moon Motor Car Co., Moon
Olds Motor Works, Oldsmobile, Oakland
Park Auto Co., Thomas, Chalmers, Hudson,
Baker electric
Phillips Auto Co., Atlas, Babcock
Victor Auto Mfg. Co., Victor
St. Louis Car Co., Standard Six
South Side Auto Co., Stanley, Matheson,
Corbin
A. Sterne Motor Car Co., Goeth, Great
Western, Rider-Lewis
Swingley Motor Car Co., Stoddard-Dayton
Union Electric Light Co., Studebaker and
Rauch & Lang electric
Western Auto Co., Pierce-Arrow

EXHIBIT ROOMS

W. C. Lewis, Woods
H. F. Van Cleave, Speedwell
Priesmeyer-Stevens, Waverley
McDonald Auto Co., Knox
St. Louis-Stearns Auto Co., Stearns, Brush
White Garage, White
Kingman-St. Louis Implement Co., Rambler
J. Cunningham, Son & Co., Cunningham
Embree-McLean Carriage Co
Darby Motor Car Co., Darby
Petrie-Philips Auto Co., Parry, Paige
St. L.-Overland Co., Overland
Glide Motor Co., Glide
St. Louis Garage Co., Johnson
Cook Motor Vehicle Co., Columbus, Krit
Charles F. Luhn, Winton
General Motor Car Co., Hupmobile, Regal,
National
Central Garage Co., Sterling
Heier-Royster Auto Co., Apperson, Carter-
car, De Tamble
Weber Implement Co., Mitchell
Capen Motor Car Co., Locomobile
J. Deere Plow Co., Jackson
Oscar Stroh, Broc electric
Missouri Automobile Co., Westcott
Midland Auto Co., Midland
Eureka Motor Car Co., Empire
Whittaker Motor Car Co., Everitt
Smith Auto and Battery Co., electrics
Phoenix Auto Supply Co.
Western Oil Pump and Tank Co.
Behen-Faught Motor Car Equipment Co.

ANNEX

Delmar Motor Car Co., Buffalo truck
Missouri Motor Co., truck
Haynes Automobile Co., Haynes
Pope-Hartford Auto Co., Pope-Hartford
Franklin Auto Co., Franklin
Middleby Auto Co., Middleby
Kupferle Brothers, tank department
Vehicle Top and Supply Co., H. J. Barton
Henderson-Willis W. and C. Co.
Carter Carburetor Co.
W. F. Polson, Star Rubber Co.
Garage Equipment Co.
F. L. Stewart Building and Realty Co.
Lakewood Chemical Co.

	Grammes
Iron oxide.....	1,000
Graphite	50
Magnesia	150

The results obtained with this were not far different from those with the iron and iron scale compound above referred to. Its advantages were that the preparation was much easier and cheaper, seeing that with the other compound, and where manufacture was extensive, it was difficult to provide forge-scale and iron filings, etc., in sufficiently large quantities.

The question of suitable furnaces was also of very great importance. Heating should be carried out with the greatest uniformity, and should be easy to regulate. The manufacture of malleable iron was facilitated in the works using the Bessemer process, seeing that the metal could, in the first place, be made to undergo a preliminary treatment in the converter.



New Home Christened—The Automobile Club of St. Louis has christened its new home, formerly the writing room of the Planters' hotel. Quarters were selected there because of the desire of the members to keep in touch with visiting motorists.

Big Car For de Palma—Announcement is made that Ralph de Palma will succeed Lewis Strang as driver of the big Fiat racer owned by E. W. C. Arnold and in which Strang broke so many records at Atlanta and Indianapolis. De Palma will drive the big car in the inaugural meet at the new board motordrome in Los Angeles in April.

Royal May Race Again—It is not beyond the range of possibility that the Royal Tourist will re-enter the racing game this season after an absence of several years from competition of this sort. The Royal was a contestant in one of the earlier Vanderbilts when it was driven by Robert Jardine and now it is said that the make will be represented in the leading road races and 24-hour track events of 1910. It will run only as a stock car, though.

Dines Trego and Zimmer—The Chicago Motor Club last Friday night tendered a farewell dinner to two of its members who are removing to Detroit. The two thus honored were Frank H. Trego, former secretary of the club, who has become manager of the technical department of the Hudson Motor Car Co., and Walter F. Zimmer, formerly in charge of the motor advertising of the Chicago Journal, who has accepted a position on Motor, with headquarters in Detroit.

All Drivers Must Register—Orders have been issued to the Indianapolis police by the board of public safety to enforce the ordinance requiring all motor car drivers to register with the city controller, the fee for which is \$1 and which does not have to be renewed. No attempt has been made to enforce the measure during the last 6 months and only about 2,500 drivers out of an estimated 5,000 have registered. All persons driving a car must register, whether owners of cars or not.

Helping Stop Scorching—A new tag to be hung on the rear axle of the machine, as a guarantee that the driver will appear in court following his detention by a policeman, has been adopted by the members of the Minneapolis Motor Drivers' Club, of Minneapolis, Minn. This is the result of an agreement on the part of the chief of police and the club members to co-operate in stopping the practice of speeding on streets, as well as for the better observance of all motor ordinances. The tag, which was designed by a member of the club, is a miniature motor wheel of metal construction and about 3 inches

in diameter. In the neck of the wheel is space for the number of the license tag which may be taken by the officer. Between the four spokes are "M. M. D. C.," the initial letters of the club's name.

South Dakota's Cars—The license record shows that the number of motor cars in South Dakota during the year 1909 increased more than 100 per cent over the number in use at the close of 1908. A total of 2,104 licenses were taken out during 1909, as compared with 823 licenses in 1908.

Country Home Planned—A clubhouse for the Portland Automobile Club, of Portland, Ore., is to be erected during the coming summer on the land owned by the club on the Base Line road near the Sandy river. Bonds will be sold to the club members to build the new home and a limit is to be set upon the amount each member can buy and if possible it will be the object of the club to see that the bonds are set out in small blocks.

Record-Breaking Sentence—What is regarded as a record-breaking sentence in the history of motordom was imposed in Buffalo recently on Edward Houck, a young man, for the fourth theft of a motor car. Justice White in the supreme court sentenced Houck to serve 9 years 8 months for the crime. Houck first stole a motor car in 1906. For that he got a suspended sentence. In the following year he again stole a machine, and was sent to Elmira reformatory. Getting out in 1908, he stole a third machine and was sent back to the institution. Soon after being released he stole the last car.

Club Does Good Work—Closing the year with an increase in membership of nearly 300 per cent, the Portland Automobile Club, of Portland, Ore., is in better shape now than it ever has been before. The membership of the club is now 397. Besides the work done on roads in the outer districts of Oregon, Multnomah county has felt the influence of the Portland Automobile Club perceptibly. The base line, section line and two of the connecting roads have been oiled and rolled into the two best highways in the state of Oregon. A road to Mount Hood now is almost a certainty, while between the efforts of the O. R. & N., Multnomah county and the residents of Hood River, a road between Portland and Hood River will be completed during the coming summer. This will mean the opening up to Portlanders of the entire lower Columbia river valley and its wonderful scenery, besides rendering the city more easily accessible as a market place for Hood River products. Over in the state of Washington the Portland Automobile Club has secured room

from the war department for the opening of a fine road through the Vancouver barracks and connecting Washougal and Vancouver and, indirectly, Portland. This road is one of the finest in the state of Washington.

Columbus After a 24—The racing committee of the Columbus Automobile Club is canvassing the advisability of holding a 24-hour contest some time this summer at Columbus, O. The officials of the A. A. A. want the meet to be held in June, while the members of the club desire the run in August.

Resurfacing Streets—The board of public works of Indianapolis has decided to begin the resurfacing of streets in the downtown business district, the streets being in poor condition. Some of the present pavements have been down 16 years and have been repaired frequently owing to cuts made for sewer, water and other public service connections. Drivers and owners of motor commercial vehicles have made special complaint against the condition of the thoroughfares.

Change at Chicago A. C.—Owing to ill-health brought about largely by the strenuousness of his work, W. W. Crawford has resigned his position as assistant secretary of the Chicago Automobile Club, the resignation taking effect Monday. Mr. Crawford's successor is James C. Gilruth, for 10 years connected with the sporting department of the Chicago Daily News and a writer on baseball, football and motor racing. Mr. Crawford's future plans are as yet uncertain.

Tags For City Cars—Attorney General Denman, of Ohio, rendered an opinion upon the request of the state registrar of motor cars which means that all municipal cars will have to register and display number plates, excepting ambulances and motor fire engines. Motor cars used by chiefs and assistant chiefs of the fire departments, those used by all other city departments will have to take out their registration papers. There is no disposition on the part of municipalities to test the matter in the courts.

Plan for Big Road Race—Plans for the Wemme trophy race for 1910 are already under way, and the race will be run on June 11, the last day of the Portland rose festival. It is planned to again roll and oil the course and to again use the roads tried out last year. It is planned, however, to straighten out the course, doing away with at least two of the turns and if possible making the course one of four or five turns. The race will be much longer this year, being lengthened to 200 or 250 miles. For the past 2 years the Wemme cup race has been 102.2 miles, and

while this has been considered long enough by some, in order to accord with the custom in the east it is believed a 200-mile race will be adopted.

May Start a Club—A club will be formed in Champaign, Ill., in a short time if the plans of Frank Stamey and Dr. J. A. Brown, of that city, carry. They have been busily engaged in canvassing the owners of machines there for the last week and the sentiment is strong for the formation of such a club.

Would Fine Cowards—Representative Scott, of Harrison county, has introduced in the Ohio general assembly a bill providing for a fine of \$33 on chauffeurs who dodge responsibility. The proposed law provides that whenever a pedestrian is run down by a motor car and the chauffeur fails to stop and render assistance or if he attempts to avoid identification the fine shall be imposed.

Prizes For Beach Meet—The association of business men having in charge the preparations for the annual cotton carnival and exposition of Galveston, Tex., have guaranteed a sum of \$2,000 to be given in prizes to the drivers participating in the motor races to be held on Galveston beach early in August. It is expected that this sum will bring out some of the fastest racing cars in the country. The races will be held under the sanction of the American Automobile Association. Captain J. W. Munn and M. O. Kopperl have the local arrangements in charge.

Chauffeur's Bonds Reduced—The Omaha city council has done a substantial service to chauffeurs in passing an ordinance reducing the bond required of them from \$1,000 to \$500. Motor livery men have heretofore found it difficult to interest bonding concerns when such a large amount was at stake, and unless they had financial support from other sources, many found it impossible to secure the necessary \$1,000 bond. Owners think that the new ordinance will enable them to secure competent drivers under the smaller bond and at the same time give the public satisfactory protection.

Suggest Pollard Pledge—Some of the members of the Automobile Drivers' Club of St. Louis have suggested the famous Pollard pledge as a means of preventing reckless driving in St. Louis. The Pollard pledge, which has been adopted in England and other European countries, has heretofore been applied only to drunkards. It was originated by Judge Pollard, of the Dayton street police court, of St. Louis. Those who take the pledge sign a paper stating they will not drink within a year from the date of the agreement. A violation of the pledge means a term in the workhouse, the judge merely staying execution on the first offense. If, however, at the end of the year the offender shall show satisfactorily that he has lived up to the letter of his promise, the court records are expunged of all charges

against him. By this way, chauffeurs who ignore the speed regulations or are careless in their handling of cars on the streets, it is believed, would be under such strict guardianship that a second offense would be long coming.

Portland Show Makes Money—Thirty-five hundred dollars profit was realized by the Portland Automobile Club, of Portland, Ore., from its second annual show and the club is in better condition financially than it ever has been before. Of this amount \$1,500 will pay up the indebtedness on the clubhouse site and the balance will be expended on the roads used in the race course.

More New Coast Roads—At a recent meeting of the King County Good Roads Association, of Washington, forty delegates were elected to attend the state good roads convention which is to be held at Aberdeen, Wash., February 23 and 24. County Commissioner M. J. Carrigan states that a macadam road will be built this year between Everett and Seattle and one from Kent to Tacoma.

Using a Motor Bus—The Knickerbocker Hall kindergarten in Indianapolis, a famous school for children, has substituted an Overland motor car for the horse-drawn vehicle that has been used to collect and deliver the pupils of the school. It has been found that by the use of the motor car this work can be accomplished in half the time and a greater territory covered. The idea is that of Will H. Brown, vice-president of the Overland Automobile Co.

Colorado Election—The Colorado State Automobile Association has elected the following officers: President, Ralph W. Smith; first vice-president, William D. Nash; second vice-president, Frank I. Ewing, Greeley; treasurer, John W. Springer; secretary, Elmer E. Sommers. The association is preparing to institute a vigorous campaign for improved roads during the coming year. It is the intention to select stretches in various parts of the state and then carry on the work of improvement. The principal work to be done is the construction of a motor highway

from Denver to Pueblo by way of Colorado Springs. This work is already well under way and it will be pushed to completion this coming summer.

Show For Springfield, Ill.—Springfield, Ill., is to have a show if the plans of the chamber of commerce carry. The show will be purely a local affair and will be held in March, according to present plans. Only local dealers are eligible. The armory has already been secured for the event.

Walla Walla Election—The Walla Walla Automobile Club, of Walla Walla, Wash., elected the following officers to serve during the coming year: Dr. E. E. Shaw, president; J. H. Morrow, vice-president; T. J. Drumheller, secretary, and W. W. Baker, treasurer.

Going to Scranton—At a meeting of the Norristown, Pa., Automobile Club it was decided to make Scranton the objective point of the third annual endurance run of the club, on May 18-19 next. The outward trip will be by way of Reading, Tamaqua, Hazleton and Wilkes-Barre, the return trip via Stroudsburg, Doylestown and Philadelphia—a total distance of nearly 400 miles. The following contest committee will manage the run: William McGee, chairman; O. F. Lenhart, D. F. Patterson, Milton Bodey and G. Altemus.

Harmony Among Dealers—One of the strongest features of the motor car business in Portland is the harmony which exists among the members of the Portland Automobile Dealers' Association. This association now has thirty-seven members. The association was organized February 14, 1907, and each year has added a number of new concerns to its list, and it is now rated as the most powerful organization of its kind on the coast. The present officers of the association are C. F. Wright, president; P. A. Coombs, vice-president; R. E. Blodgett, secretary, and G. S. Brackett, treasurer. The dealers' association recently won a big victory from the transcontinental railroads in having the railroad freight rates reduced materially, the rates having been raised at a time which threatened to work damage on a fine trade for the coming season.



OVERLAND MOTOR WAGON USED TO CARRY INDIANAPOLIS SCHOOL CHILDREN



Among the Makers and Dealers



Has the Corbin—G. W. Parkey, of 2230 Farnam street, Omaha, Neb., has taken the agency for the Corbin car this season.

Grand Rapids in Line—The Grand Rapids, Mich., fire department will have a motor hose cart and ladder truck. The council has resolved to allow the fire commissioners to expend \$5,000 in its purchase.

Have Ford in Wisconsin—Taft & Henderson of Whitewater, Wis., are handling the Ford in several counties of southern Wisconsin. Ward & Dorr of Whitewater, Wis., have been appointed district agents for the Brush runabout.

Wisconsin Events—The Green Bay Motor Car Co. of Green Bay, Wis., has taken the agency for the Maxwell and Regal. O. R. Hughes of Marshfield, Wis., district agent for the E-M-F, has broken ground for his new garage on City Hall square. Hans Sattler of Sheboygan, Wis., is a new district agent for the Overland.

Sheboygan Firm Moves—The Wilke Auto and Machine Co. of Sheboygan, Wis., has moved into its new quarters at Center avenue and North Eighth street. The new garage is 60 by 38 feet in dimensions, with concrete floors, steam-heating system and a complete station for recharging electrics. The shop will remain in the Deland building.

Builds a Motor Sleigh—George Turner, an Indianapolis man, has invented a motor sleigh, resembling a motor car in many respects, except that it is built close to the ground. He believes the only place where it will be practical will be in the countries of the frozen north, where it will be of benefit in carrying mail. It has a 2-horsepower air-cooled motor, and is chain-driven. The sleigh is mounted on a beech plank and a propeller is attached

to the rear, which has two-pointed wheels resembling a saw. These are set in motion by means of the chain-drive.

Model S Mitchells Shipped—The first regular allotment of model S Mitchells to be sent to dealers, left the plant of the Mitchell-Lewis Motor Co. at Racine, Wis., early in February.

Frost Thomas Salesman—A. D. Frost, who was with the Harry Houpt Co. in New York for some years handling the Thomas and later the Herreshoff car, has gone to Boston, where he is now with the Thomas agency there.

Plum For Sandusky—Announcement is made by J. J. Dauch, president of the Business Men's Club, at Sandusky, O., that the association is closing a deal for a large motor plant in that city. It will give employment to about 500 men. The present location of the concern and its name are withheld until the final papers have been signed up.

Another New Car—The McFarlan Motor Car Co., of Connersville, Ind., has brought out the McFarlan six, the company having a plant covering 5½ acres of ground. The McFarlan Motor Sales Co. has been organized by C. A. Chambers to handle the Indiana state agency, and has established headquarters in the State Life building, Indianapolis.

Taylor Starts Company—The Taylor Motor Distributing Co., of Philadelphia, at the head of which is William T. Taylor, formerly manager of the Quaker City branch house of the Olds Motor Works, has just been formed to represent in Philadelphia the Warren-Detroit. The other members of the new company are Frank B. Cook, vice-president; Philip M. Price, secretary, and R. Y. Spare, sales manager. Temporary

quarters have been secured at 320 North Broad street pending the securing of a more suitable location.

New Oregon Garage—E. D. Snodgrass, of Tillamook, Ore., is constructing a new garage to house the Auburn, for which he is agent.

Barnes Goes to Anhut—H. C. Barnes, superintendent of the Overland company at Indianapolis, has severed his connections with the Overland to become factory manager of the Anhut Motor Car Co., of Detroit.

New Agencies in Indianapolis—Several new agencies have been announced in Indianapolis as follows: W. D. Williams, proprietor of the Capitol garage, 27 North Capitol avenue, Stearns and Powercar; Fisher Automobile Co., Courier; Conduit Automobile Co., Velie. This is the first time these cars have ever been represented in Indianapolis.

Brewery Builds Garage—The Cream City Brewing Co., Thirteenth and Vliet streets, Milwaukee, Wis., is building a large private garage for its delivery trucks. The company is using motor trucks almost exclusively. The building will be 100 by 160 feet in dimensions, of reinforced concrete construction, with complete equipment and repair shops.

Locates in Wilkinsburg—The Kline Kar Motor Co., recently organized by J. D. Kerr and Clyde Phillips, has secured headquarters at South avenue and Hays street, Wilkinsburg, Pa., in the garage formerly used by the Eastern Automobile Co., which is a building 80 by 120 feet in size. The company has a well-equipped machine shop and a big vulcanizing plant.

Doubles Its Floor Space—The Jewell-Melbert Co., agent in Galveston for the Chalmers and the Inter-State cars, is enlarging its garage to double its former floor space. The garage will now be 42 by 100 feet. In the rear will be done assembling, cleaning, re-charging of electrics and repairing, while on the second floor is a machine shop, with lathes, drill press and other machine shop paraphernalia.

A Small E-M-F—On view at the Chicago E-M-F Co., at Michigan avenue and Twenty-first street, Chicago, is a miniature reproduction of the E-M-F 30, which was built by Swanson Brothers, of Stromberg, Neb., and which weighs only 156 pounds. It carries a four-cylinder motor with the cylinders cast separately and with a bore and stroke 1½ inch square. The engine is rated at about ½ horsepower and the car carries such other features as thermosyphon cooling, splash lubrication, cone clutch, a sliding progressive gearset, and



CENTRAL MOTOR CO., DENVER HOME OF WHITE, STEARNS AND KNOX.

shaft-drive. The wheelbase is 44 inches and the tread 24 inches. The tires are 15 by 1½-inch pneumatics.

Handling the Ford—Belleville & Dawson, of Twin Falls, Ida., recently has completed its new garage and installed a line of Ford cars.

Handling Accessories—Ira Brown, head of the Brown Auto Top Co., of Philadelphia, has taken a lease on 441 North Broad street, that city, where he will open up a large establishment for the sale of accessories.

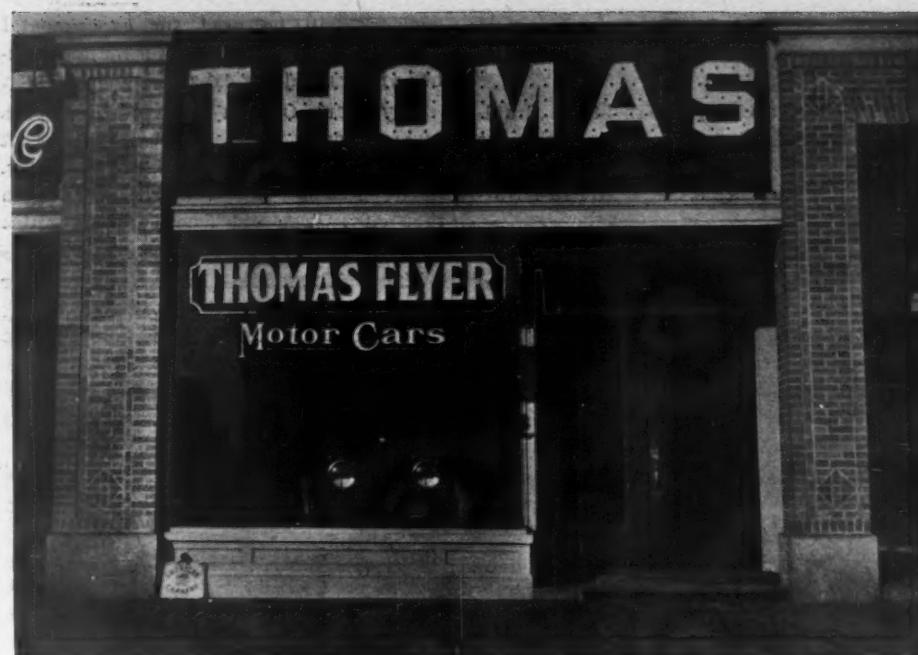
New Swinehart Branch—The Swinehart Tire and Rubber Co. has just opened a new branch in Philadelphia at 1437 Vine street, with D. Thomas Keenan as manager. A complete line of solid and pneumatic tires will be carried in stock at the new branch.

Secures More Room—The Foss-Hughes Motor Car Co., Pierce-Arrow agent, has outgrown its present establishment at Broad and Race streets, Philadelphia, and has secured larger quarters on North Broad street, next door to the White garage.

Making Room—Brown, Thomson & Co., agents for the Cadillac, Stevens-Duryea and Lozier, in Hartford, Conn., are tearing down two large buildings in the rear of their garage to make way for the addition planned for the present garage on Temple street. As soon as the old buildings are razed work will be begun on a two-story garage.

Join Stewart Forces—Fred R. Hill, formerly with the New York Warner Instrument Co., and Harry Weber, formerly with Herz & Co., have now joined the Stewart & Clark Mfg. Co.'s traveling force, maker of Stewart speedometers. Hill will make his headquarters at Philadelphia and cover Pennsylvania and southern territory and Weber will make his headquarters at Kansas City and cover all the southwest.

New Orleans' Latest—Latest to enter the field in New Orleans is the Gentilly Auto Co., which handles the Babeack electric for Louisiana, the Brush runabout for Louisiana, the Speedwell for Louisiana, and the Gramm-Logan trucks for Louisiana, Mississippi and Texas. The show room is at 218 Baronne street. The garage will be erected at Canal and Marais streets. It will be 60 by 114 feet, one story high, with a solid glass front, and



NEW HOME OF THE THOMAS IN BOSTON, C. S. HENSHAW IN CHARGE

concrete walls and floor. R. E. E. de Montluzin is president, and Ralph Cuculli is manager of the corporation.

Krit Its Leader—The Eclipse Motor Car Co., of 955 South High street, Columbus, O., has taken the central Ohio agency for the Krit, of Detroit.

Making Parts, Not Cars—The Standard Connecting Rod Co., of Beaver Falls, Pa., is enlarging its plant for the purpose of manufacturing motor car parts and not motor cars as was the current rumor.

Take Truck Agencies—The Century Motor Sales Co., of Detroit, has taken the agency of the Beyster-Detroit delivery car for Michigan. The Guarantee Sales Co., of Ocean City, N. J., has been allotted the state of New Jersey by the Beyster-Detroit Co. F. E. Champion, of Ocean City, will be the active manager of this company.

Franklin in Albany—The Franklin Automobile Co. announces the establishment of branch at 240 Washington avenue in that city. The building at that location will be remodeled for a modern garage and salesroom, and it is expected that the headquarters will be ready to open about April 1. For some time the branch has been occupying temporary quarters at 71 State street. N. S. Lee has been appointed

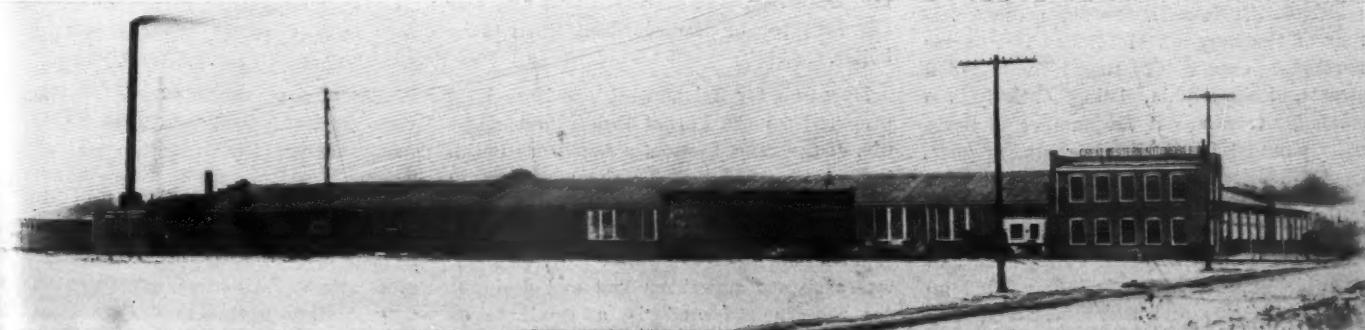
branch manager, and Albany has been made headquarters for the sale of Franklin cars in that locality.

Buys Building for Garage—Axel Peter-son of Escanaba, Mich., has purchased the Lacombe building at 303 Ludington street and will convert it into a garage.

Places Sub-Agency—The Coit Automobile Co. of Omaha has contracted with the North-Shaver Co. at Red Oak, Ia., for the sale of the Rambler and Mitchell cars in Mills and Montgomery counties, Iowa.

Ford Agent in Columbus—The Ohio Auto Sales Co. is the name of a new sales agency in Columbus, O., which has established a temporary office at 27 West Russell street. Later on it will move to Goodale and Front streets. W. B. Zimmerman is general manager and the company is central Ohio agent for the Ford.

Velie Buys Machinery—The Velie Motor Vehicle Co., Moline, Ill., has just added to its machine equipment by the purchase of the machinery of the Monarch Motor Car Co., of Chicago. This machinery is practically new, and a large part of it will be installed in the motor department of the Velie plant. The Velie factory, since the completion of its addition, is 420 feet long by 80 feet in width and five stories high. The base-



VIEW SHOWING GREAT WESTERN'S NEW BLACKSMITH SHOP, ASSEMBLING PLANT AND PAINT SHOP AT PERU, IND.

ment has a width of 95 feet. The plant is of reinforced concrete, Turner system, and sprinkled throughout.

Will Have a Garage—Trachte & Grahlman of Johnson Creek, Wis., implement dealers, have decided to remodel their new building and devote a large part to a garage.

Top Concern Starts—The Wisconsin Auto Top Co. of Racine, Wis., has started operations in its new plant at Racine Junction. The concern was organized several weeks ago to succeed McAvoy Brothers.

Has Concrete Garage—The William Basse Automobile Co., of Madison, Wis., has moved into its new concrete garage. The structure is 45 by 65 feet and fire-proof throughout. The company handles the Auburn and Rider-Lewis cars.

Rainier Agency in Wheeling—H. C. Whittaker, president of the Wheeling Corrugating Co., has closed for the Rainier agency for the northwestern section of West Virginia and the southwestern section of Ohio, with headquarters in Wheeling, W. Va.

Help For Foster—C. H. Foster, patentee of the articles manufactured by the Gabriel Horn Mfg. Co., of Cleveland, found it necessary for him to devote more of his time to the manufacturing end of his increasing business. H. D. Preston therefore has been appointed sales manager of the company.

Headquarters in Eau Claire—The Ideal Auto Car Co. has been organized by Ole G. Kinney, of Colfax, Wis., and headquarters have been established in Eau Claire, Wis., for the distribution of the Ford and Brush in northwestern Wisconsin. The temporary location is in the Bonnell Carriage Co.'s works, and in the spring a large garage will be erected on South Barstow street, Eau Claire.

Will Make Bodies—The Delmar Auto Body and Wheel Co. has established a factory in Indianapolis for the manufacture of motor car bodies, wheels and tops, and later will add the manufacture of other motor car parts. Back of the company are men representing a total wealth of \$1,000,000. E. H. Habig and E. E. Weir, who have been with Indianapolis manufacturing concerns several years, have active management of the concern.

Bergdoll's New Plant—The present factory of the Bergdoll Motor Car Co., at the northeast corner of Broad and Wood streets, Philadelphia, being entirely too small for turning out the number of Bergdolls planned for during the coming year, Louis J. Bergdoll, the head of the company, has secured the big building formerly occupied as a garage by the defunct electric bus company at Thirty-first and Dauphin streets, which is being fitted up with machinery and thoroughly equipped for the purpose. The Bergdoll taxicab also will be built at the new plant, and the old

quarters will be used for experimental work and the turning out of a limited number of cars and taxicabs.

Buy Port Clinton Garage—Word has come from Port Clinton, O., that Holmes and Woodford, of New Jersey, have purchased the Standard garage in that city. The old firm of Mathews & DeWitt will retire from the business.

Have Hupmobile and Fiat—Taylor Brothers, Milwaukee, Wis., representing the Hupmobile, have leased quarters at Wells and Sixteenth streets for garage and salesroom purposes. The firm has recently obtained sales rights for the Fiat in Wisconsin.

Adds Two More Cars—The Early Motor Car Co., of Columbus, O., which opened a large sales room near Town and High streets recently, has added two more agencies to its list, making five in all. The Whiting and Warren-Detroit have been taken for southern Ohio, including Delaware county.

Making Tops in Omaha—The E. W. Reynolds Mfg. Co., of Omaha, has begun the manufacturing of tops at 1008-1010 Jackson street. The present quarters are but temporary and larger accommodations will be found on Farnam street as soon as possible. The factory will have a capacity of sixteen to twenty tops daily.

Going With General Motors—F. A. Law, for a number of years identified with the Columbia Motor Car Co. and its predecessor, the Electric Vehicle Co., has tendered his resignation to General Manager H. W. Nuckols to take effect February 19, when he leaves this city to accept a position with the General Motors Co.

In For Himself—Edward Miller has opened a sales room at 705 Ann street, Columbus, O., where he handles the Premier. Mr. Miller formerly was associated with W. K. Mathews in the Miller-Mathews Co., which handled the Jackson and Premier. After the partnership was dissolved the O. G. Roberts Co. took the central Ohio agency for the Jackson.

Incorporated in Ohio—The McNaull Auto Tire Co., of Toledo, was last week incorporated with a capital stock of \$50,000 by W. D. McNaull, Frank Caughling, Edgar C. Hampton, Frank E. Miller and Perry F. Parrott. The new concern will handle a rubber tire for motor cars, the invention of W. D. McNaull, who also was the inventor of the McNaull water tube boiler.

New Job for Salzman—Plans have been prepared for the Patent Holding and Mfg. Co., of Spokane, to erect a four-story building, costing \$15,000, for the manufacture of a commercial motor car to be designed by George Salzman, who has been named superintendent of the plant. Mr. Salzman was assistant superintendent and designer for the Thomas and is a graduate of Princeton and the Boston Institute of Technology. The company with which he

is now identified will go into the garage business, but will make a feature of the building of commercial motor cars.

Rubber Plant in Milwaukee—The Peru Para Rubber Co., owning 375,000 acres of rubber tree land in South America, has moved its headquarters to Milwaukee. Milwaukee capital is heavily interested in the project.

Hammond Makes a Change—After 6 years service with the Premier Motor Mfg. Co., Indianapolis, as factory superintendent, Harry L. Hammond has taken a position with the sales department of the Fisher Automobile Co., of the same city.

Will Call It the Field—The product of the new Field Automobile Mfg. Co., which has established a plant at 241-245 North Ninth street, Lincoln, Neb., will be known as the Field 30. The company will make but the one model. The firm is composed of Charles and W. Field.

Has Glide State Agency—The Redfield Motor Car Co., of Redfield, S. D., has purchased a site for a garage 40 by 165 feet. The building will be two stories high. The firm is composed to T. S. Everitt, C. J. Mariner, F. W. Gerhard and D. H. Blume. It will handle the Glide for which it has the state agency.

Another For Finch & Freeman—Finch & Freeman, of Indianapolis, have added the Warren-Detroit to their line. The company also states W. B. Peterson, formerly with a manufacturing chemical company, has taken a position with its sales department. The company has the agencies for the Richmond, Auburn and Rider-Lewis, in addition to the Warren-Detroit.

Harding An Alcoite—Hugh N. Harding, the racing driver, who has driven in nearly several big road races during the last 6 years, has joined the forces of the American Locomotive Co., at the Alco factory in Providence, R. I. Although best known as a driver, Harding is a technical man and will be engaged in experimental and testing work, under the direction of B. D. Gray, chief engineer.

Truck Plant For Chicago—The Saurer truck, a Swiss production, will be manufactured in Chicago in the near future, it is announced, a company having been formed for that purpose by W. M. Thompson, a prominent iron man, and A. B. Scully and W. D. Sargent, of New York. The company is incorporated under the laws of New Jersey, but will have its factory and general offices in Chicago.

Ohio Incorporations—The Schoellkopf Auto Radiator Co., of Cleveland, O., has been incorporated with a capital stock of \$25,000, by William Schoellkopf and others. The Derain Motor Co., of Cleveland, has increased its capital stock from \$30,000 to \$60,000 by papers filed with the secretary of state recently. The Queen City Motor Car Co., of Cincinnati, has been incorporated with a capital stock of \$10,000 by F. M. Bering and others. The

Cleveland Auto Trading Co., of Cleveland, has been incorporated with a capital of \$5,000 by C. K. Halle and others.

Corbin Agents Move—Urling & Co., western Pennsylvania distributors for the Corbin, have moved into their new salesroom at 5977 Center avenue, east end, Pittsburgh.

Adds the Fuller—The E. W. Clark Auto Co., of Fond du Lac, Wis., agent for the Jackson, has now taken on the Fuller. The company also handles the Buick in the Fond du Lac district.

Locates at Crete—A new brick garage 42 by 120 feet will be erected at Crete, Neb., by the Universal Automobile Co. Twenty-four feet will be devoted to office and salesroom, 68 to storage and the remaining 28 feet to a work shop. The building will cost \$5,000.

Death of George Welton—After a short illness, George W. Welton, aged 50, died at Grant hospital, Columbus, O., from a complication of diseases. He was vice-president and general manager of the Welton Automobile Fender Co. He came to Columbus from Akron several years ago.

Stevens Takes Abbott-Detroit—The Abbott-Detroit has been added to the Boston colony, the agency for the car having been taken there by M. A. Stevens. He formerly was with the Royal Tourist branch in the Hub. Salesrooms have been opened on Columbus avenue near the Back Bay station.

New in Wisconsin—The Wisconsin Dry Battery and Self-Winding Electric Clock Co. has filed incorporation papers in Wisconsin and a charter has been granted. Headquarters are in Milwaukee. The capital stock is \$50,000 and the incorporators are Stephen A. Douglas, S. M. Douglas and J. W. Disch.

Building in Green Bay—Green Bay, Wis., will have a new garage, Frank R. Buchholz having awarded contracts for the construction of a fireproof brick structure for D. G. Meyer, a well-known agent now located at South Washington and Doty streets, Green Bay. The building will cost \$10,000. It will be steam-heated and have all modern conveniences. It is to be ready June 1.

Goodrich Capacity—Two hundred tires per day, is now the capacity of the immense plant of the B. F. Goodrich Co., at Akron, O. It is rather interesting to note that, figuring the outside diameter of each tire at 40 inches, nearly the actual measurement of a 32 by 4½-inch tire, these tires of 1 day's output would line up over 1¼ mile. Measuring the circumference of a tire as a unit, figures would be three times this amount or about 4 miles of tires per day, and 100 miles per month. The production for 1 year of the Goodrich company would extend in a straight line from the statue of Liberty to the Mississippi river. Forty years ago when the B. F. Goodrich Co. was starting

in Akron, fifty-five men were employed, today there are 5,000 men employed on the day force and 1,000 men at night.

Made Seattle Manager—W. E. Baylis, who has been northwest salesman for the Fisk Rubber Co. for the past year, has been appointed Seattle manager for the concern, to fill the position of the late R. H. Dowie.

Will Move—The Chalmers-Hipple Co., which handles the Chalmers and Hudson in Philadelphia, is preparing to move from its present restricted quarters at the corner of Broad and Vine streets, to a much larger plant at 206 North Broad street.

Columbus Wants Fire Wagon—Mayor Marshall, of Columbus, O., has recommended the purchase of a combination motor fire wagon with hose cart and hook and ladder for the Hilltop section of the city. An ordinance to that effect will soon be presented to the city council.

New Hub Store For Thomas—C. S. Henshaw, eastern manager for the Thomas, has leased several thousand feet of floor space at 57-61 Stanhope street. The illustration on page 35 gives some idea of the exterior. A 35-foot sidewalk in front of the store, one-half of which is controlled by the Thomas branch and gives an excellent opportunity to display motor vehicles.

Incorporates in Virginia—The Packers' Motor and Truck Co., of Pittsburg, has been formed by James F. McGarry, East Liverpool, O.; William Zellar and Edward K. Callahan, of Pittsburg, and George D. Pratt, of Buffalo, N. Y. The company has a capital of \$100,000 and will manufacture motor cars, motor supplies, motor trucks and aeroplanes. It incorporated under West Virginia laws.

Popular in Walla Walla—During the past year the motor car business has been good in Walla Walla, Wash., and there now are upward of 200 machines owned by the citizens of that place. A great number of retired farmers make their home in Walla Walla, and they find the motor car almost indispensable in looking after their land interests. Several Garden City residents who own large wheat farms also are in possession of two and sometimes more cars.

Changes at Hartford—A number of changes have taken place in the selling field at Hartford, Conn., within a short time. Robert R. Ashwell, who had the Franklin for some years, has given it up and S. C. Hutchinson has taken it on with salesrooms at 1260 Main street. Russell Tabor, who recently acquired the Reo, has taken on the Knox, recently represented by the Miner garage. George D. Knox, Peerless representative, has taken the Hudson and Alexander Smith has given up the Regal. A. W. Peard, who had the Overland, has released that car which has been passed along to E. H. Harris at 516 Main street. Peard will retire from the field altogether. C. K. Hansen, who operates a

garage and tire agency at 10 Jefferson street, is advertising the Hupmobile and the Everitt.

Has Schacht and Great Western—The Western Automobile Co., of Omaha, has taken the Nebraska and Iowa agency for the Schacht and Great Western.

Takes Springfield Agency—The Ohio Automobile Co., Dayton, O., has been appointed state distributor for the Springfield car made by the Springfield Motor Car Co., Springfield, Ill.

Will Make a Change—E. C. Johnson, Philadelphia sales manager for the Packard for some years, will on March 18 step into the position of general sales manager of the Bergdoll Motor Car Co. He is now in Jamaica for a month's rest.

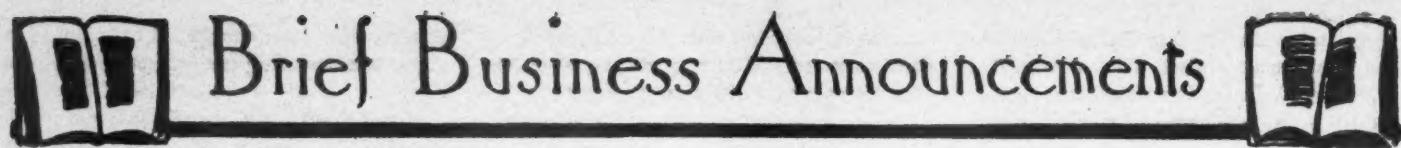
Offices Not Moved—The recent announcement that the Ford Motor Co., of Detroit, had moved into its new factory at Highland Park had reference only to the manufacturing departments and did not apply to the offices which will remain at the old plant until the new office building is ready for occupancy.

Omaha Garage Opened—The new Sweet Edwards garage at 2052-54 Farnam street, Omaha, was thrown open to the public last week. A formal reception was held and the garage was prettily decorated with palms and thick rugs covered the floor. While refreshments were served and the orchestra furnished music, the American Traveler, Moon and Parry cars were displayed.

Changes Among Tire Men—The past week has been remarkable for a series of changes in the tire trade in Detroit. Morgan & Wright announce the appointment of W. C. Standish as the manager of the Detroit branch. The Diamond Tire Co. has appointed James Q. Goudie its new Detroit branch manager, in place of the late G. J. Bradley. The Rubber Co. of America has opened a branch at 870 Woodward avenue, with J. J. Martin in charge.

New Truck Company—The Abresch-Cramer Auto Truck Co. has been incorporated in Milwaukee, Wis., with a capital stock of \$20,000. The incorporators are Charles Abresch, Robert Crawley and L. Schneller. Charles Abresch is at the head of the Charles Abresch Co., 398 Fourth street, Milwaukee, which has been manufacturing wagons and carriages and now devotes most of its time to building bodies and a line of commercial vehicles designated the Abresch truck.

Need More Room—O. G. Roberts & Co., of Columbus, O., who opened a large sales agency and garage at 931 Gay street about a year ago, is having plans prepared for a large addition to the plant which will double the capacity. The present structure is 80 by 150 and the addition will be either 70 by 90 or 150 by 25. The Roberts company recently took the central Ohio agency for the Courier. In addition the concern handles the Overland, Jackson, Stoddard, Dayton, Stearns and Marion.



Brief Business Announcements

Nashville, Tenn.—J. S. Roler has just secured the agency for the Petrel car.

Pittsburg, Pa.—The Pittsburg Auto Equipment Co. has bought the entire plant of the Union Auto Repair Co.

Dayton, O.—The new storeroom and garage of the Peckham Motor Car Co., at the corner of First and Main streets, has been opened.

Kansas City, Mo.—H. G. Kirkland is now settled in his new home at 3328-3330 Main street and is to act as agent for the Overland and Marion cars.

Detroit, Mich.—The Fairchild Auto Co., of 840 Baronne street, which has been handling the Winton for some time, has taken the agency for the Rauch & Lang electric.

Nashville, Tenn.—A new repair company has just started in business under the name of the Standard Motor Car Co. In addition to a repair business the company is to do a renting business.

New York—Everett S. Hilton, formerly connected with Morgan & Wright, has bought an interest in the local branch of the Regal company and is to succeed A. C. Banker as manager of that concern.

Houston, Tex.—J. Wade Cox, who is the local agent for the Ford, has closed a lease for the entire ground floor of the Sternenberg building at Milam street and Waller avenue, which is to be used as the display and salesroom.

Pittsburg, Pa.—Application will shortly be made for a charter for a new concern to be known as the Duquesne Auto-Parts Co., which is to manufacture and deal in trucks, motor cars and vehicles, together with their parts, appliances and accessories.

Minneapolis, Minn.—M. R. Waters & Sons, who are the local agents for the Stearns, expect to remove shortly to their new establishment at Hennepin and Laurel avenues. They are now located at the Nicollet avenue garage at Nicollet and Grant streets.

Chicago—The Woods Motor Vehicle Co., of Chicago, has filed a certificate increasing its capital stock from \$150,000 to \$300,000. Another change in a local company has been the increase of the capital of the Randolph Motor Car Co. from \$300,000 to \$500,000. The number of directors has been decreased from nine to five.

Pittsburg, Pa.—The Pittsburg Steel Products Co., of Monessen, which was recently organized to take over the business of the Seamless Tube Co. of America, has decided to branch out into a new line of manufacture. The plant is to be enlarged and the company is to go into the manufacture of reinforced concrete steel prod-

ucts, steel telephone poles and motor car axles.

Des Moines, Ia.—The Herring Auto Co. is now settled in its new garage on Locust street.

Portland, Ore.—C. C. Landy, of the Van Matre-Landy Automobile Co., Portland, has secured the Pacific coast agency for the Napier.

Trenton, N. J.—Harry J. Stout, who is local representative for the Pullman Automobile Co., has secured the agency for the Brush.

Boston, Mass.—In the future the representative of the Atlas Motor Car Co., of Springfield, in this city is to be J. W. Crowell, of Newton Center.

Allentown, Pa.—Walter F. Wink has leased the garage of the Dietrich Motor Car Co., at 24 North Tenth street, and is to occupy it as the Wink Motor Car Co.

Springfield, O.—Glenn Frazell, of the Springfield Garage Co., has opened an agency in Dayton for the E-M-F and the Flanders and will have associated with him F. W. Fisher.

Boston, Mass.—The Hudson-Colby Co. has opened its new salesrooms at 121 Massachusetts avenue and has announced that in the future it will represent the Herschhoff in eastern Massachusetts.

New York—Albert L. Bennett has joined the forces of the Colt-Stratton Co., in the capacity of sales manager, and will look after the interests of the Cole and the Paige-Detroit, which are represented here by this company.

Cleveland, O.—Charles L. F. Weber, who has been the head of the company of that name for a number of years, has retired from that concern and in the future is to devote his entire attention to the interests of the Rauch & Lang.

Jacksonville, Fla.—The Leon Automobile Co. has opened a garage and salesroom in Tallahassee and will do general repair work and will also start a line of taxicabs in the city. C. B. McKinnon and C. M. Burns are the members of the firm.

Pontiac, Mich.—The Hess Spring and Axle Co. is planning the erection of another large plant to be located in this city. A number of the stockholders of the Carthage plant are interested in the new scheme, which is in no way to affect the old factories.

Houston, Tex.—A permit has been granted to the Ford Motor Car Co., of Detroit, Mich., to do business in this state. The capital stock of the company is \$2,000,000 and branches are to be established in both this city and Dallas. J. W. Cox is to be the local agent for this car, and headquarters will be located in the Sternenberg

building, at Milam and Walker streets.

Indianapolis, Ind.—The Mais Motor Truck Co., of Peru, has been incorporated with a capital of \$300,000.

Kansas City, Mo.—The Bergers Automobile Co. is refitting and improving its garage at 1524 Grand avenue.

New York—The Glide, which has been represented in this city by G. J. Scott, is now being looked after by G. M. MacWilliams.

Cleveland, O.—In the future the local manager of the Babcock Electric Company is to be R. T. Mitchell, who has identified himself with that company.

Philadelphia, Pa.—Louis J. Bergdoll is preparing to move his plant from its present location at Broad and Wood streets to the larger establishment at Thirty-first and Dauphin streets.

Oakland, Cal.—J. E. Nicholson, H. C. Hoffman and L. J. Little have formed a partnership under the name of the Western Motor Car Co. They have leased the building at 538 Seventeenth street and will conduct a garage.

St. Paul, Minn.—The Burney Bird Auto Co. has filed articles of incorporation and is to engage in the motor car business in this city. Burney Bird is to be the president of the concern, as well as treasurer; Louise R. Bird is vice president and C. B. Warren secretary.

Philadelphia, Pa.—Application is shortly to be made for a charter for a new concern to be known as the West Philadelphia Carriage and Wagon Works, which is to manufacture, deal in and repair wagons, carriages, motor cars, together with all their parts and appliances.

Oakland, Cal.—The Auburn is to be represented in this city by the Wagner-Renfiff Motor Car Co., which has the agency for the Auburn in northern California. F. R. Hurst is to act as manager of the new concern, which will make its headquarters on Twelfth street.

Detroit, Mich.—The Rapid Motor Vehicle Co., of Pontiac, has purchased 50 feet of land on Woodward avenue, between Palmer and Antoinette avenues, and as soon as the weather permits ground will be broken for the erection of a garage, to be devoted exclusively to the use of commercial trucks.

Boston, Mass.—In the future the local office of the Regal Motor Car Co., which has had its headquarters in Park square, is to be a branch house. The Regal Motor Car Co., of Detroit, has bought out the interest of N. C. Griffin in the local concern and A. W. Mutty has been appointed manager for New England, while H. H.

Brown, of Detroit, is to be in charge of the local office.

Austin, Tex.—The Baker-Cameron Automobile Co., of Dallas, has filed a certificate of dissolution.

Philadelphia, Pa.—A. Krouse, of 317 North Broad street, has been appointed representative for the Halladay.

Tampa, Fla.—C. F. Irseh has been appointed agent in this locality for the Jackson and has established headquarters in the Arcade.

Connersville, Ind.—It is likely a plant for the manufacture of lamps is to be established here. Paul C. Krastin and William E. Butcher, of Detroit, Mich., are among those interested.

Scranton, Pa.—Schulte & Dean, who are the agents for the Rambler and Regal cars, are planning the erection of a new garage on Adams avenue. The company is now located at Washington avenue and Ash street.

Shelbyville, Ind.—The Clark Motor Car Co. has received its first shipment of bodies, and commencing March 1 and continuing until September the plant will be run on both a day and night shift, making the daily output fifteen machines a day.

Springfield, Mass.—At the annual meeting of the stockholders of the Atlas Motor Car Co. the old officers were elected as follows: President, Harry A. Knox; vice-president, W. S. Pease; treasurer, W. G. Morse. The business was reported as being about 50 per cent greater than the preceding

year and the regular annual dividend of 8 per cent was declared.

Pittsburg, Pa.—The Keystone Automobile Co. will in the future act as local agent for the Marmon.

Springfield, Ill.—Notice has been given by the Hart Motor Car Co., of Chicago, of the change of name to the Hill-Independent Mfg. Co.

New London, Conn.—Franklin G. Hinckley, of Stonington, has been appointed receiver for the West Mystic Mfg. Co., maker of motor engines.

Detroit, Mich.—Within the next 3 weeks ground is to be broken at Junction and Leverette avenues for the erection of a new plant for the Van Dyke Motor Car Co. in this city.

Philadelphia, Pa.—Application is shortly to be made for a charter for a company to be known as the Selden Car Co. of Pennsylvania, which is to deal in motor cars, equipments and supplies.

Dover, Del.—The Johnson Motor Car Co. has filed articles of incorporation under the laws of this state. The incorporators named are James J., C. R. and J. H. Johnson, all of whom are residents of Philadelphia.

Philadelphia, Pa.—A new company has been formed to look after the local interests of the Warren-Detroit and is to be known as the Taylor Motor Distributing Co. William T. Taylor, former manager of the local branch of the Olds Motor Co., is the president of the new company; Frank

B. Cook vice-president, and Philip M. Price secretary and treasurer.

Albany, N. Y.—The Central Garage Co., of Middletown, has been incorporated with a capital stock of \$10,000.

Herkimer, N. Y.—The Crist Motor Car Co. has opened a salesroom in this city under the management of L. J. Lutes.

Minneapolis, Minn.—The Maytag Co., of Newton, Ia., is shortly to open a branch in this city to act as representative for the Maytag and Mason cars.

Philadelphia, Pa.—The Chalmers-Hipple Motor Co., agent in this city for the Chalmers and the Hudson cars, has decided to remove from Broad and Vine streets to 206 North Broad street.

Milwaukee, Wis.—The Kopmeier Motor Car Co., of this city, has filed articles of incorporation in the state of Illinois with a capital stock of \$100,000.

Peoria, Ill.—The Crown Automobile Co., which is now located at Liberty and Madison streets, is planning the erection of a new garage at Main and Globe streets. The company is the local agent for the Fal-car and the Waverley electric.

Detroit, Mich.—The Watt Motor Co., which was organized in November and within the past few weeks increased its capital stock from \$100,000 to \$300,000, is planning to commence building operations as soon as the weather permits, having purchased a 10-acre lot on Conant road, between Mount Elliott avenue and the Grand Trunk railway.

Recent Motoring Incorporations Reported From the State Capitals

Wabash, Ind.—Standard Automobile Co. of America, capital \$500,000, to engage in the manufacture of motor vehicles, etc.; incorporators, G. J. Kobusch, W. S. McCall and A. R. Walton.

Hackensack, N. J.—Bacon's Garage Co., capital stock \$50,000, to deal in motor cars and supplies; incorporators, James Bacon, R. D. Earle 3rd and R. D. Earle, Jr.

Perth Amboy, N. J.—The Packer House Garage Co., capital stock \$50,000, to do a general motor car business; incorporators, Alexander and Arthur Conquest and W. S. Higgins.

Asbury Park, N. J.—Asbury Park Automobile Co., capital stock \$50,000, to manufacture motor cars, conduct garages, etc.; incorporators, D. Havens, F. T. Weeden and L. P. Croce.

Baltimore, Md.—Taxi-Service Co., of East Orange, capital \$50,000, to do a general taxi-cab business; incorporators, F. C. McKinney, A. R. Mapleton and R. E. Taylor.

New York—Motor Car Conveyance Co., capital stock \$100,000.

New York—Post Lock Register Co., of Manhattan, capital stock \$100,000, to engage in the manufacture of taxicabs and lock registers for the same; incorporators, T. W. Post, C. Colgate.

New York—MacWilliam Automobile Co., capital stock \$10,000, to manufacture and deal in engines, motor cars, etc.; incorporators, J. P. MacWilliam, A. F. Williams and J. A. Bolies.

Chicago—Oak Park Garage, capital \$10,000; to do a general garage and machine shop business; incorporators, R. B. Crandall, R. I. Willis and R. C. Hanna.

Peru, Ind.—The Mais Motor Truck Co., capital stock \$300,000; to engage in the manufacture of motor trucks; incorporators, M. G. Cochran, E. W. Spencer and W. A. Wood.

Chicago—K. & S. Garage Co., capital stock \$5,000; to do a general motor car and garage business; incorporators, C. K. Samuels, T. Mueller.

New York—New Taxicab and Auto Co., capital stock \$25,000; to engage in the manufacture, deal in and repair motor vehicles; incorporators, G. H. Reaney, F. J. Manning and M. W. Cooper.

Louisville, Ky.—L. W. Thompson Co., capital stock \$5,000; to deal in motor accessories and sporting goods of other kinds; incorporators, L. W. Thompson, J. F. Ecker and R. P. Thompson.

Newark, N. J.—Markowsky Inventions Co., capital stock \$50,000; to go into the manufacture of motor vehicles, mechanical devices, etc.; incorporators, W. M. Brown, H. C. Beecher and A. Markowsky.

Morristown, N. J.—Eastern Krit Sales Co., capital stock \$100,000; to manufacture, deal in and repair motor vehicles; incorporators, V. H. and T. H. Wiss and W. G. Hurtzil.

Chicago—Plymouth Garage Co., capital stock \$2,500, to do a general motor garage business; incorporators, J. H. McGay, J. J. Downs and I. N. Walker.

Rutherford, N. J.—Lumund Motor Car Co., capital stock \$150,000, to engage in the manufacture of motor cars; incorporators, Joseph and Yetta Lumund and John Delmonte.

Buffalo, N. Y.—Windsor Motor Car Co., capital stock \$10,000, to engage in the manufacture of motors, motor vehicles and engines; incorporators, H. M. Colgrave, J. Schmid, Jr., and J. Buettner.

Ogdensburg, N. Y.—Hannan & Henry Motor Car Co., capital stock \$12,000, to operate a garage, manufacture and deal in motor cars; incorporators, D. C. Henry, M. J. Coffey and R. J. Henry.

New York—Anderson Storage and Repair Co., capital stock \$3,000, to manufacture and deal in motors, engines, motor cars; incorporators, A. Miller, P. Freed and A. H. Mittelmann.

New York—Monaton Motor Car Co., capital stock \$100,000, to deal in motor cars and supplies, build and operate garages, etc.; incorporators, M. McKenna, W. J. Markell and W. M. Scott.

Buffalo, N. Y.—Superior Motor Vehicle Co., capital stock \$200,000; incorporators, H. A. Hamman, J. Lansing and I. T. Gleason.

New York—C. G. Auto Co., capital stock \$10,000, to manufacture motor cars, engines, etc.; incorporators, D. McConnell, J. J. Cook and H. F. Lee.

Detroit, Mich.—Sterling Auto Top Co., capital stock \$25,000; incorporators, William F. Connolly, B. Morley and C. S. Barnes.

Chicago—National Automobile Co., capital stock \$5,000, to deal in motor wagons, trucks, supplies and accessories; incorporators, F. A. Hart, A. E. Aldinger and I. M. Pearson.

Chicago—Crescent Garage Co., capital stock \$100,000, to operate a motor livery and garage; incorporators, F. D. Moon, C. D. Fuller and H. L. Fuller.

Pittsburg, Pa.—Pittsburg Motor Car Co., capital stock \$5,000; incorporators, J. D. White, J. A. Paige and E. L. DeVore.

Syracuse, N. Y.—American Motor League, capital stock \$25,000, to manufacture and deal in engines, motors, motor vehicles, etc.; incorporators, J. J. Barrett, S. G. Schlachter.

Auburn, N. Y.—Empire Jack Co., capital stock \$10,000, to manufacture motor cars and motor car jacks; incorporators, E. G. F. H. and H. A. Weeks.

Camden, N. J.—Louis J. Bergdell Motor Co., capital stock \$500,000, to engage in the manufacture of motor vehicles; incorporators, L. J. Bergdell, F. R. Hansell and J. A. MacPeek.

Fresno, Cal.—George Motor Co., capital stock \$25,000; incorporators, C. D. Armstrong, E. H. Chapin, R. F. George and C. C. Gasley.

New York—Gleason Taxicab Co., capital stock \$25,000, to deal in and operate taxicabs; incorporators, C. H. O'Neill, T. E. B. Costello and J. F. Whitley.

New York—Monaton Motor Car Co., capital stock \$100,000, to deal in motor cars and supplies, as well as building and operating garages; incorporators, M. McKenna, W. J. Markell and W. M. Scott.

The Motor Car Repair Shop

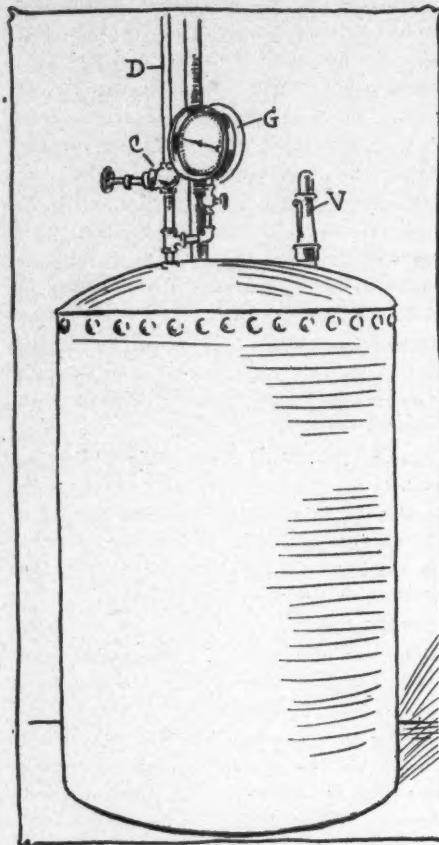


FIG. 1—COMPRESSED AIR TANK

Compressed Air in the Shop

AN accessory to the equipment of the motor car repair-shop which, owing to the many uses to which it can be put, is steadily growing in application and popularity, is that of the compressed-air outfit. The advantages of having compressed air on tap long since have been appreciated and adopted in many branches of mechanics; but, in few if any of the many instances in which the installation of a compressed-air system has proven beneficial, are there as many useful ways of employing it as to be found in connection with the repair and cleaning up of motor cars. The necessity of compressed air for the inflation of tires alone has been enough to justify many garage men in the installation of expensive power pumps; and many wide-awake foremen have taken advantage of this requirement to increase their own facilities.

To enumerate a few of the uses of compressed air, in addition to that of the inflation of tires: It may be used to blow the water out of acetylene gas piping, to clean out oil-leads, to blow carbon out of the small recesses of cylinders after they have been scraped, to blow all particles of dust or chips from bearings, caps, oil-holes and inaccessible recesses of the crankcases, preparatory to final assembly, and in connection with gas or gasoline, to operate

blow torches and brazing outfits and to assist in cleaning up all sorts of motor car mechanisms. It is also used to operate air-drills and riveting hammers, it furnishes a draft for the forge, and there is no doubt but that many other ingenious methods of its application will be found when it becomes more extensively used in connection with garage and shop operations.

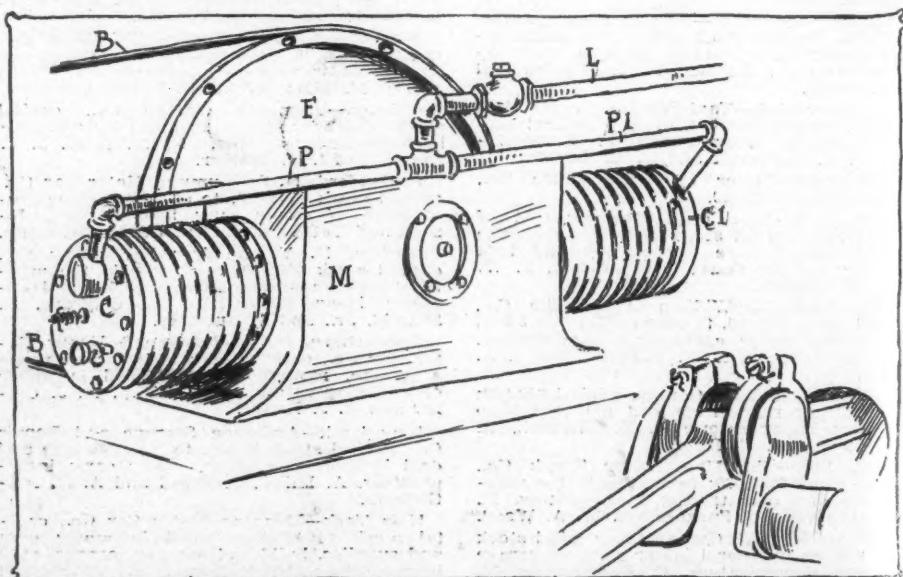
Some of the important features of an outfit which has been in successful operation for several months, and which is now an essential and permanent fixture of the Stevens-Duryea branch in Chicago, are shown herein. This outfit was designed and constructed by Louis F. Stafford, foreman of the repair department, and is by no means lacking in originality. The compressed air outfit itself consists of the two-cylinder compressor pump shown in Fig. 2, the storage tank, Fig. 1, and the necessary piping and fittings to conduct the air to the various taps about the shop. These are also accessories to the system which have been invented since the installation of the outfit.

This air compressor has two air-cooled cylinders, C and C₁, the bore and stroke are 3 $\frac{1}{2}$ and 4 $\frac{1}{4}$ inches respectively, and it is driven by a belt on the flywheel F from the shafting which drives the machine tools. The cylinders are of cast iron, and bolted onto the cast iron crankcase M. By means of a clever attachment of both connecting-rods to a single throw of the crankshaft as illustrated in Fig. 3, both cylinders are directly opposite each other, which greatly facilitates manufacture and adds to the neatness and simplicity of the whole design. The compressor rests on a shelf overhead, where it may be readily inspected but is out of the way. The air, which is taken into the cylinder through the automatic air valves in the cylinder

heads, is forced through the pipes P and P₁, into the lead L, which conducts it to the storage tank through $\frac{1}{2}$ -inch piping. This tank is about 2 $\frac{1}{2}$ feet in diameter and 5 feet high. It has a capacity of 250 pounds pressure, but generally contains a pressure of about 120 pounds, so that a comfortable margin is allowed for safety. The tank is equipped with a gauge, G, by which the amount of pressure in the tank can be readily seen; a blow-off valve, V, which is set and sealed by the U. S. inspector, and a stop-cock, C, is provided in the distributor pipe, D, so that pressure may be maintained in the tank regardless of possible leaks in the distributing lines. Flexible connections are, of course, used to conduct the air to the nozzles or appliances in or with which it is employed.

Cars and Lubrication of Chains

By jacking up the rear axle the chains may be revolved by hand and, by use of a brush, wiping cloth and a little gasoline the chains may be cleaned quickly and then greased for general service and smooth running. A number of times a year, however, according to the mileage of the car, if the best results are desired, the chains should be removed from the car and treated as follows: First, remove as much dirt and grease from the chains as possible with a brush and gasoline, then soak over night in gasoline or kerosene; they then should be rinsed in gasoline and hung up to dry. To lubricate the chains when clean and dry, soak them for about half an hour or more in some heavy melted lubricant. The lubricant should be heated in a heavy pan of such shape that the chains may lie wholly submerged, and should be hot enough to flow freely but still not hot enough to draw the temper of the steel.



FIGS. 2 AND 3—THE AIR COMPRESSION AND ITS CONNECTING-ROD ATTACHMENT